



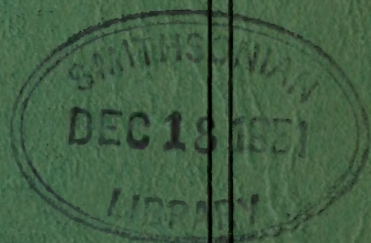


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Bot.
VOL. VIII

No. 1.

- The -
**British Fern
Gazette**

1951



EDITED BY

Rev. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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Adiantum Farleyense (*see page 2*).

THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII.

1951

No. 1

CONTENTS								Page
EDITORIAL	...	...	...	...	...	...	...	1
FRONTISPIECE: <i>Adiantum Farleyense</i>	...	...	...	...	...	...	...	2
THE ANNUAL MEETING	...	...	...	...	...	...	...	3
OBITUARY	...	...	...	...	...	...	...	6
BLECHNUM SPICANT	...	...	...	...	...	...	...	7
A VISIT TO BIRDBROOK	...	...	...	...	...	...	...	9
CYSTOPTERIS FRAGILIS	...	...	...	...	...	...	...	10
FERN CULTURE	...	...	...	...	...	...	...	12
OPHIOGLOSSUM PENDULUM	...	...	...	...	...	...	...	18
NOTES AND COMMENTS	...	...	...	...	...	...	...	20
SOUTHPORT SHOW, 1951	...	...	...	...	...	...	...	21
LIST OF MEMBERS	...	...	...	...	...	...	...	24

EDITORIAL

At the start of a new volume, we wish our members long continuance with every benefit in fern growing. There are signs that a revived interest in British ferns is on the way, and thanks are due to the Horticultural Press for recent help towards this.

If such interest comes, it will be a cause of satisfaction to us all: if not, we shall go on as we have done for so long—mostly isolated from one another geographically but united in our common enjoyment of a branch of plant-growing that is never dull, and never fails us.

The last volume, owing to the gap during the war years, and later difficulties, stretches over 15 years. At the present rate, this new one will take nearly as long to complete: we can only begin with the hope that there will be a change in the conditions which now prevail, and that the course of our "Gazette" will become more rapid.

It does seem to be true that the longer one studies a subject, especially a living one, the less one feels that one knows about it; that is a reason for the constant new contributions and material that comes in for publication, though, editorially, we are most grateful.

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The reprint of an article does not, necessarily, mean that a gap has to be filled: we put one in, partly because former "Gazettes" are scarce and out of reach of many of us, but also because some ferns may otherwise get less attention than they deserve. *Blechnum spicant* is, actually, one of our own favourites; and we believe there are now very few of its varieties in existence.

Here is a chance, for members who come in contact with this fern, to remedy a serious omission in our collections: though personally we have not shared Mr. Druery's success in finding varieties, in spite of the examination of hundreds of wild plants.

At the Annual Meeting Mr. T. H. Bolton made an excellent suggestion which, if supported, may do a very great deal to revive interest in British ferns, and the Society. He proposed a combined exhibit, by as many members as possible, of the best ferns available, at an R.H.S. fortnightly show.

Members present at the meeting considered that September would be the best month, and the Secretary of the Royal Horticultural Society writes that space will gladly be allotted for such an exhibit.

Details will have to be worked out, and members will be notified of these; and a reminder given during next summer. As a preliminary, it can be said that any member who will help this effort can bring as many plants as can be transported: and the Hon. Secretary (of our Society, *not* the R.H.S.) may be advised at any time of any member's intention to join in the scheme.

Since the Annual Meeting was held, a new member has joined, M. Christophe Bange, of Lyon, Rhône, France: whom we are especially glad to enrol on our list, as a link once again with Continental Pteridologists.

OUR FRONTISPIECE

The plant of *Adiantum Farleyense* was one of a group shown in a new class for six greenhouse ferns at Southport, last August, in the first prize exhibit entered by Hull University College; staged by Mr. E. D. Deighton, Head of the college gardens, who is to be congratulated on bringing an admittedly difficult fern to such perfection.

This has now become a rare plant, and needs cultural conditions which are likely to keep it comparatively so under present-day circumstances. It was chosen for illustration in the belief that many members will be glad to get a good idea of its appearance.

THE ANNUAL MEETING, 1951

The 48th Annual General Meeting was held on Saturday, September 15th, 1951, in the Board Room of the British Museum (Natural History) by kind permission of the Trustees.

Six members attended: the President, Mrs. J. Healey; Mr. T. H. Bolton; Mr. J. W. Dyce; Mr. P. Greenfield; and the Hon. Secretary.

The Minutes of the previous Meeting were read, confirmed, and signed.

The Hon. Secretary said that no opportunity had been found to stage exhibits of ferns at any show in Southern England. It was remarked that exhibits, mainly of Adiantums, had been noted at the Chelsea Show.

Mr. Bolton suggested applying for space at a September fortnightly show of the R.H.S., and this proposal was at once adopted; members to stage exhibits co-operatively.

The meeting then elected officers: as President, Mr. A. H. G. Alston, on the proposal of Mr. Bolton, seconded by Mr. Greenfield.

The President proposed and Mr. Dyce seconded the election as Vice-Presidents of Professor Weiss; the Revd. E. A. Elliot; Mr. R. Whiteside; Mr. T. H. Bolton; Mr. A. J. Macself; and Professor R. E. Holttum.

Mr. J. W. Dyce was re-elected as Treasurer, and the Revd. E. A. Elliot as Secretary and Editor, on the proposal of the President, seconded respectively by Mrs. Healey, Mr. Bolton and Mr. Greenfield.

Mr. P. Temple was re-elected Auditor.

On the proposal of the President, seconded by Mr. Dyce, the following Committee was elected:—

Mrs. J. Healey	Mr. B. Hayhurst
Dr. S. P. Rowlands	Mr. R. Kaye
Mr. A. Brunt	Mr. A. J. Macself
Mr. J. D. Dixon	Mr. A. E. Wade
Mr. P. Greenfield	Dr. J. Davidson
Mr. C. W. Grubb	

Mr. Wade has found he must decline office, so there are at present two vacancies.

The President asked the Hon. Secretary for his report.

ANNUAL REPORT

The past year has in some ways been a more encouraging one for the Society, though there are still difficulties. Several new members have joined through real interest in our Society, and such acquisitions will prove of benefit, and give new strength. One member, of some 20 years standing, has died:

Mr. W. J. Davies. On the other hand a number of members have dropped out, and the total number is at present 70 of those whose subscriptions have been received.

The President, the Hon. Treasurer and the Hon. Secretary met in London in March, and considered the situation: and decided that the Society must be kept going, as it seemed there is still a place for it in the Botanical and Gardening worlds.

The 1950 and 1951 Shows at Southport come within the scope of this report: the Annual Meeting was held there in 1950, when—as already stated in “Gazette”—a good muster attended. In 1951, exhibitor-members were rather fewer, but it is a good sign that some of them were newcomers. New contacts have also been made with overseas fern enthusiasts: this concerns the Botanical side of our activities more especially, though the extension of the interest of some of our members to include alien ferns may benefit, by these new memberships.

For the first time for many years, an excursion was arranged in 1950 when a few members, including the President, visited Wisley and found the ferns there were being well cared for and in excellent condition.

The excursion to Birdbrook, where those who were able to attend were most hospitably received by Mr. and Mrs. T. H. Bolton, is to be described in the “Gazette,” but cannot be omitted from this Report.

There has been some notice recently in the Horticultural Press of the Society, and of fern growing: this is welcomed, and is also being referred to in the “Gazette” Editorial.

As it is suggested that the next Annual Meeting should be held at Southport Show, an excursion of some kind seems desirable in that area, so that Northern members can take full advantage of it.

The President proposed and Mr. Greenfield seconded the acceptance of this Report, and this was carried.

The President then asked the Hon. Treasurer for his Report.

TREASURER'S REPORT

1950/51

I am pleased to be able to present a much more satisfactory Statement of the Society's finances than I did last year. Subscriptions have come in fairly well, producing £38 17s. 4d. compared with £22 11s. for last year. The sale of old “Gazettes” and a copy of Lowe's “British Ferns” has helped us to the extent of £2 1s. 2d. and we gratefully acknowledge receipt of donations amounting to £5 10s. which have been a useful addition to our funds.

Our expenditure amounted to £53 18s. 6d., a reduction

of £2 15s. 5d. on the previous year, but postage expenses amounting to roughly £3 are due to the Secretary and Treasurer, making our outlay practically the same for both years. The cost of the "Gazettes" and Blocks totalling £48 13s. shows an increase of only a few shillings on the amount given in my last Statement. Printing of the Balance Sheet sent out by the President after last year's Annual Meeting cost £1 18s. 6d., but no other charges have been incurred for Stationery.

Our increased revenue has enabled us to almost balance our books this year, and our expenditure has exceeded our income by only £7 10s. compared with £30 11s. 5d. for last year. The financial position, although still far from satisfactory, has thus shown great improvement, but still not enough to warrant continuing the issue of two "Gazettes" per year. Our present membership is 85, and of this number 22 are in arrears with subscriptions, most of them for 3 years. We feel sure that the majority of the defaulting members are still interested in our Society, and wish to continue their support, but good intentions are not enough, and we would earnestly ask all members who are in arrears with subscriptions, and who still find pleasure in the receipt of our "Gazette," to seriously consider the matter. Send your subscriptions to me, and enable us to put our finances on a firmer footing so that we can again issue two "Gazettes" per annum, and give better value for money received.

Before I finish, here is a suggestion for all members. There must be many fern lovers scattered throughout the country who would be pleased to join our Society if approached—many have not even heard of us. We had ten new members last year, and would like to double that number this year. So, one last word—when moving amongst people likely to be interested, don't forget to do a little quiet advertising for the British Pteridological Society.

J. W. DYCE.

FINANCIAL STATEMENT, 1950/51

RECEIPTS			EXPENDITURE		
	£	s. d.		£	s. d.
1950					
30th June			Gazettes	43	5 0
To Balance	39	11 6	Blocks for Gazette ..	5	8 0
Subscriptions	38	17 4	Printing Balance ..		
Donations	5	10 0	Sheet	1	18 6
Sale of Gazettes ..	1	17 11	Postages	1	0 0
Sale 1 copy Lowe's			Subscription R.H.S.	2	2 0
"British Ferns" ..	3	3	Cheque Book		5 0
			Balance in Hand ..	32	1 6
	£86	0 0		£86	0 0
1951					
30th June	£	s. d.			
To Balance	32	1 6			

The President thanked the Hon. Treasurer for his Statement, and said the increase in the financial balance was very satisfactory. Mr. Bolton seconded, and the Report was adopted.

The names of ten members who had not been formally elected were before the Meeting:

Mr. Walter S. Allen; Mr. M. D. Mann, Jr.; Mr. W. L. Askew; The National Museum of Wales; Dr. J. Davidson; Mr. C. E. Rigby; Mr. E. A. J. Duffy; Mr. D. F. H. C. Russell; Professor R. E. Holtum; Mr. J. S. R. Thomson.

The President proposed their election, seconded by Mr. Greenfield, and they were declared duly elected.

Stansfield Memorial Medal

The Hon. Secretary proposed that this should be awarded to Mr. P. Greenfield, who had done a great deal of work, often unknown and difficult, and had helped the Society not only to continue but to make a real advance. The President seconded this proposal, which was cordially accepted. Mr. Greenfield replied. It was arranged that affiliation to the R.H.S. should continue.

Mr. Greenfield proposed and Mr. Dyce seconded a hearty vote of thanks to the President for his Chairmanship, in which the other members joined, and the Meeting then closed.

OBITUARY

It is with much regret, we record the death on March 25th, 1951 of Mr. William Thomas Davies, of Port Dinorwic, Caernarvonshire, at the age of 74.

Mr. Davies joined the Society about 20 years ago, though his interest in ferns was lifelong, inherited from his father, a native of Llanberis. Most of the varieties in his collection of a hundred plants were found locally by him, and his notes (kindly presented to the Editor by his son-in-law, Mr. Crosby) show his knowledge of, and care for, a wide range of specimens.

In other local affairs Mr. Davies took great interest during his 50 years as clerk to the Port Dinorwic Slate Quarry; he was long Secretary to the Bethania C.M. Chapel; Secretary and prime mover in the Port Dinorwic Y.M.C.A.; at one time Chairman of the Parish Council; and, above all, an enthusiastic member of the St. John Ambulance. In this, many honours were bestowed on him, including the highest, when he was made a Commissioned Officer of the Brigade by

the King: the first occasion on which an ordinary member had been so honoured.

E.A.E.

BLECHNUM SPICANT

(The Hard Fern)

BY THE LATE C. T. DRUERY.

Considering the tough evergreen nature of this pretty fern, which justifies fully its common name, and its abundance in many parts of the country, it is very curious that it so rarely figures among the common ferns of the garden; for if given a shady, moist station, it is fully capable of taking care of itself, and forming a distinct feature among the other common species. In nature we find it abundant in humid shady woods, on sloping hedge banks, and often on exposed heaths among heather and other low-growing vegetation which gives it some protection, while in boggy situations it may be seen among the sphagnum. It has two particular aversions, viz., drought at the roots, and lime in either the soil or the water supplied to it; hence, a condition of success under culture is provision of rain or quite soft water, as hard water contains lime, and inevitably kills it in time.

The writer years ago lost the bulk of a collection of 40 varieties through this cause, but as evidence of survival for a long period under pot culture with rain water, he has several surviving finds dating nearly 20 years back which are still in fine condition. The soil should be an equal admixture of leaf-mould or peat, and good friable loam lightened with some coarse silver sand.

The Hard Fern or *Blechnum* is a solitary British member of a large family or genus, and is distinguished from all other British ferns by producing two distinct kinds of fronds, one set being dark lucent green, once divided into blunt, closely-set teeth or pinnae, and pendant, so that they spread round in a sort of lax rosette; the other set, which bears the spores, is stiff and upright, longer and narrowed in all parts, so that the teeth are hardly leafy at all and stand much farther apart. On the back of these fertile pinnae are two rows of spore heaps, covered when unripe with a thin skin-like indusium springing from just within the narrow leafy margin on each side. This constitutes the difference between *Blechnum* and *Lomaria*, in which the edge of the leafy portion itself forms the cover. In *Lomaria*, too, the fertile fronds are always narrowed, as in our *Blechnum*, while in many foreign *Blechnums* and in one British variety, this is not the case. *B.s. anomalum*, not rare in hilly districts, has all the fronds leafy and lax, and the spore heaps ranged along the midribs of the pinnae of most of them. In all the other varieties, and as we shall presently see, there

are many, the marked difference between the two classes of fronds persists and is often emphasised, broad, leafy, widely-tasselled barren fronds being set off by their stiff erect fertile ones with spiky, many-fingered crests, or it may be, with heavy bunch crests resembling green flowers.

Some of the varieties, nearly all of which have been found wild, are very striking. The writer's first find in the fern line was *B.s. concinnum* Druery, found in 1881, on a stone dyke on the middle of Exmoor. In this the long, blunt teeth of the barren normal frond are transformed into deeply notched semi-circular short ones, like tiny scallop shells, so that the frond forms two even rows of these from end to end, and is about one-third of an inch wide only. The fertile fronds are merely knobbed all the way up with hard little bosses containing the spore heaps.

In the Lake District Mr. Barnes found an equally narrow fern, *B.s. lineare*, but the rounded lobes are flat and smooth-edged, and so slightly divided that the barren frond is strap-like, and the fertile ones far narrower still and not knobbed. Two forms midway between *concinnum* and the common are *B.s. contractum* and *B.s. strictum*, the former with round lobes a third of the way up the frond, and the latter more or less irregularly narrowed the entire length. *B.s. imbricatum* has the fronds shortened and side divisions so densely set on as to overlap, and *B.s. crispissimum* Hartley is a little dwarf an inch or two high only, said to have been raised from *strictum*, though widely different. The *Blechnum* is occasionally found with the edges saw-toothed, *B.s. serratum* Airey is a well-marked wild find of this type, and through its spores gave Mr. Airey a much improved plant, termed *B.s. plumosum* Airey, divided nearly thrice, and very handsome. It has also done well in the tasselling direction. Fern hunting among the *Blechnums* goes rarely unrewarded as regards plants with some forked fronds; more rarely a plant is found with all fronds divided at their tips, and the writer's second find hard on the heels of *B.s. concinnum* was a fine specimen of this class, *B.s. polydactylum* Druery, with many-fingered tassels hanging down a hedge slope by the roadside near Wooda Bay, by Lynton.

B.s. ramo-cristatum, Kinahan's and Maunder's forms, branch first and tassel afterwards in a very handsome way, and *B.s. Maunderi*, raised from the latter, is simply a dense ball of cresting. *B.s. multifurcatum* Barnes, sometimes called *trinervio-coronans*, has a stiff, radiating crest on a sort of stalk on the frond tip, and is very distinct and pretty. *B.s. Aitkinianum* is a curious branching variety, and the several distinct finds known as *cristatum* are all pretty and worth growing.

B.s. trinervium is a singular type not uncommon in hilly districts, especially in Ireland; in this the two bottom divisions of the frond are considerably lengthened, and in *B.s.t. Hodgsonae* they are so large as to make the frond a trident. *B.s. Forsteri* is a remarkable leafy, crispy, dense variety, difficult to describe, but very distinct, and the writer has found three forms which approach it, one a dwarf, one very foliose, and one nearer the normal, but well-forked pinnae here and there, and the pinnae set on so closely as to crowd each other and run together—confluent—at the frond tips. Mr. E. J. Lowe records 85 varieties of this charming fern, and as it does well with pot culture, a frame, or a shelf or two in a cool greenhouse, may well be devoted to a collection. It is perfectly evergreen, retaining its barren fronds quite fresh well into the second season, and until the new ones are perfected; the fertile ones perish much earlier and can be cut off as soon as shabby without detriment.

The chief thing to bear in mind is, we repeat, the necessity of rain water or water free from lime, and the next thing, the plant must not go dry; these points attended to, and proper planting to start with, the *Blechnum* will survive its owner.

A VISIT TO BIRDBROOK

That is the title of an article by the late W. B. Cranfield in the August, 1948, "Gazette" to which it was natural to turn when Mr. T. H. Bolton most willingly wrote accepting the proposal of an excursion by the Society.

In spite of his immense knowledge of ferns, Mr. Cranfield owned himself baffled by some of the Polypody varieties: and unable to do full justice, in the short time then at his disposal, to a great many of the other plants he saw.

On September 8th last, eleven visitors arrived at various times and were most hospitably received by Mr. and Mrs. Bolton and their son and daughter; to all of whom we express the formal and most cordial thanks for so kindly and generous a welcome. In order of arrival the visitors were Mr. J. Brookfield and Mr. N. Brookfield, Mrs. Healey, Mr. P. Greenfield and the Revd. E. A. Elliot, Mr. and Mrs. C. W. Grubb and Mr. and Mrs. J. A. Grubb, Mr. and Mrs. J. W. Dyce. Mr. Cranfield's visit was on a cold day in November, and after much damage (some of it irreparable) from snow; the excursion this year was under ideal weather conditions, and the damage is long past and—as far as may be—overcome.

The plants lost, are gone; but their number is undiminished, and in fact probably greater, as Mr. T. Bolton

now has a collection which—we think—was not formed in 1947, and which is still being added to.

As far as was noticed, five genera are included: *Athyrium*, *Lastrea*, *Polystichum*, *Polypodium* and *Scolopendrium*: four of which contain the most numerous varieties, and these are there at Birdbrook in immense quantity, in the best condition.

Some of them were new to, and could not be named by, any of the party.

Others were finer than any specimens seen elsewhere; and, to the writer at least, many varieties were up to that time, only names.

Last year's excursion to Wisley was of a similar type—up to a point; to see a large collection.

This year's went beyond that point; it had behind it a personal force and interest which we hope will long continue. The party left Birdbrook enriched in mind and in fact, after what will remain one of the pleasantest excursions in the Society's history.

CYSTOPTERIS FRAGILIS

In what perhaps may be called its normal form in this country, this is a delicately pretty little fern. It is doubtless well-known to our members, but is probably not often cultivated. Though easy to cultivate, particularly in shady rock-work, it turns brown before the summer is out, and this drawback may account for its comparative neglect among fern growers. C. T. Druery pointed out this drawback and apparently himself took little interest in the fern. The specific name is probably due to the fact that a frond will break away from the base at a mere touch. The stipes is exceedingly thin, but is not so weak as it appears, no doubt, because it is stiffened by the channel along the top of it—a character not often mentioned in popular descriptions.

Cystopteris fragilis is a fern of the Temperate Zone and is exceptionally widely distributed in the northern hemisphere. It is found also in the southern hemisphere. It is notorious as being extremely variable in form, so much so that this peculiarity was noticed by the early botanists in this country, although they appear not to have noticed varieties in our other fern species. They even went so far as to indicate that there were fixed varieties of it, e.g., *dentata* and *angustata*. With more justification the form *Dickieana* found in a cove near Aberdeen, was indicated as a fixed type.

Knowing that *C. fragilis* was engaging the special attention of scientists and proving to be something of a puzzle, the

writer took the opportunity of a visit to Edinburgh to obtain permission, kindly given, to examine specimens at the herbarium of the Royal Botanic Gardens. These specimens had been collected, by several botanists, from the year 1827 onwards. Some were labelled *dentata*, others *angustata*; but probably if all the finders could have seen each others specimens, none would have tried to sort them into any fixed varieties, but would have regarded the species as merely liable to random variations of form.

Useful as herbarium specimens are, it is, of course, more satisfactory to examine living specimens in the field, and as it seemed likely that central Scotland might be a happy hunting ground and there were some old habitats to look up in order to verify, if possible, the accuracy of the records, Dunkeld and Aberfeldy were adopted as centres for a fortnight's holiday in early June of last year and proved very suitable for the purpose in view.

Cystopteris resembles our *Aspleniums* in liking horizontal cracks in rocks as a natural habitat and as a satisfactory substitute man-made walls whether mortared or unmortared. Throughout the district visited there are roadside banks held up by loose stone walls and on many of them large colonies of the fern can be found. Lime, although perhaps a mere trace of it may suffice, appears to be necessary for the continued well-being of *Cystopteris* and the absence of the fern from some of the walls is probably accounted for by complete absence of lime.

Two old habitats for *Cystopteris Dickieana* are given for the neighbourhood of Dunkeld. It is reasonably certain that these were found; but although there was *C. fragilis* in quantity, there was no *Dickieana*. A habitat near Loch Tay recorded for 1794 was visited with a similar result. It would appear somewhat unsafe to accept as correct the old records for *Dickieana* in central Scotland.

Some considerable variation in form of *C. fragilis* was observed in the neighbourhood of Dunkeld, but much more on excursions made from Aberfeldy to Loch Tay, Killin, Glen Ogle, Glen Lyon and local roadsides. The range of variation seen in this area in a short time was almost as great as that of the numerous specimens at Edinburgh, except that no very definite examples were seen of a type with pinnules much reduced in size and of an approximately circular shape. This type was called *dentata* by some of the finders of it, but differs from other types to which the same term has been applied. The freakishness of *Cystopteris fragilis* is astounding. One frond where some pinnules had expanded enormously in a more or less circular form, and adjacent ones

were severely stunted, was nothing short of a monstrosity. On one plant on a churchyard wall one frond was different from the others. This last bit of waywardness on the part of *C. fragilis* had been observed by early botanists and is mentioned by Francis and probably other authors.

These peculiarities in *C. fragilis* cannot be explained by environment. The only differences which could be attributed to environment are the expansion and thinning of pinnules in damp and shady situations and the reverse effect of open situations with little, if any, shade and less moisture at the roots. The former condition was well exhibited by some specimens of *C. fragilis* found by Mr. J. E. Lousley, of the London Natural History Society, when recently searching caves near Aberdeen for *Dickieana*.

Dickieana, it may be mentioned, is now supposed to be extinct at Aberdeen. It has within recent years been found in Norway, and a habitat in Sweden was visited last year by our President—see Vol. VII, page 300.

It is very desirable to extend the search for more examples of unusual forms of *C. fragilis*, especially in Scotland, where districts not visited by the writer might yield interesting results. It may be that there is a zone of greatest variation. Fronds collected by Mr. J. W. Dyce near Inverness towards the northern limit of the fern's range in Great Britain and at Matlock towards the southern limit, are approximately normal. A very few rather abnormal forms were found many years ago in Wales and in northern England, most, if not all, of them among the mountains. Recently a fairly extensive examination of limestone rocks in Ribblesdale, in the Malham district and in Wharfedale, in which areas the fern is plentiful, revealed no abnormal forms whatever.

If any member who may be able to hunt *Cystopteris fragilis* in the British Isles would like first to communicate with the writer it is hoped that he will do so. It should be stated that a period should be chosen not earlier than the middle of June.

P. GREENFIELD.

THOUGHTS ON HARDY FERN-CULTURE AFTER MANY YEARS' EXPERIENCE

By A. J. Macself, V.M.H.

In writing for publication in "The British Fern Gazette" I am very well aware that the remarks will be read by some who have had experience as wide as, or wider than, my own, and whilst it might be argued that since I am writing for the benefit of new, and thus far, inexperienced members, it is

wiser to be upon the safe side than it would be to run risk of failure through error, I do not do so, but rather do I urge that anyone who, having adopted methods which are at variance with my recommendations, and have found them successful, will write to the Editor, contradicting any statement of mine and giving in detail their ideas of procedure which may be adopted by other growers with reasonable prospects of success.

First, let it be assumed that some reader contemplates making his first hardy fernery ; among his first questions will be, "Where is the best position I can choose?" In reply to that, I say the real essentials are shade and shelter from the roughest, battering winds that blow. In some gardens, shady corners or strips already exist and where they do not, they can usually be created by means of hedges or tall-growing plants, and it generally can be contrived to ensure that whatever is used to create necessary shade, can also become the means of sheltering from buffeting winds.

Next to choice of situation comes preparation of soil, and this should be very thorough, because among other advantages of hardy ferns, is the fact that, when once they are planted they need not be moved for many years. That is an economy of labour which, in these days of costly gardening, cannot be ignored.

By insisting that preparation must be thorough, it is not inferred that the soil must be enriched by addition of much manure of either animal or chemical nature. The fact is, I am no believer in either of these for ferns which it is hoped will last for many years. I am well aware that large, fine fronds may be produced by liberal feeding, and this is necessary in the case of ferns grown in pots for the purpose of exhibition, and that is dealt with later, but for the plants grown for permanency, in the garden, my idea is that a "fed" fern makes poor growth and is prone to come uneven in growth afterwards.

The "thoroughness" referred to above concerns the correction of physical defects in the soil. Many soils are either too heavy, owing to being charged with clay to an excessive degree, or are too light and sandy for ferns. In either case the remedy lies in leaves, decomposed vegetation from a compost heap, and anything which will create a spongy, moisture-soaking and humus-making root-run for the ferns. In excessive cases it may be necessary to dig such soil more than once, adding the vegetation at each digging. That is why I refrain from stating that any period of time should elapse between digging and planting, preferring to say that planting may be commenced when ground is ready.

Do not be eager to remove stones from the soil. In my own case, when I made my present fernery some quarter-century ago, I actually dug in quantities of added stones. That is for two reasons. One is that stones help drainage, by holding apart particles of soil which would, otherwise, bind too closely. At the same time I have found that immediately underneath every stone is a patch of soil which will remain moist long after surrounding soil dries during periods of drought.

I am a firm believer in the great advantage of deep digging, mainly in the interests of drainage. It cannot be too strongly stressed that, although ferns like moisture, it is extremely few which can tolerate anything approaching stagnation of water in their root-run. For this reason, I say that nothing short of two full spade's depth is sufficient for the first digging of the outdoor fernery.

Do not be misled by the oft-made statement that to grow ferns one must have brown fibrous peat. As a matter of fact, many ferns are absolutely indifferent as to the presence or absence of fibrous peat in their root-run. Some ferns actually dislike it, and the proportion which must have it is extremely small. I have not bought a bushel of brown peat in the twenty-five years I have lived in my present place, but, I add, I have used much granulated sphagnum peat for digging in. This I use instead of leafmould, chiefly because it rots down at a slower pace than leaf mould, and I invariably make sure that it is thoroughly moistened by repeatedly turning and watering before it is dug in. This is because sphagnum peat which is dry, will remain dry for a long time, even though surrounding soil may be excessively wet.

Eventually, the ground becomes ready to start planting. If this happens to be at the beginning of September, one may then plant the evergreen ferns, such as the *Polystichums*, *Scolopendriums*, and the like. September seems to be the best month of the year to remove these, but I prefer Spring planting for *Athyriums*, *Lastreas*, *Cystopteris* and other deciduous ferns, because I dislike moving them when they approach their normal period of dormancy and rest. It will be noted that I am using the generic names which I have known since boyhood. I do this despite the knowledge that botanists have decreed that *Polystichums* are *Aspidiums*, *Scolopendriums* are *Phyllitis*, some *Lastreas* are *Nephrodiums*, while others are *Aspidiums*, etc. The majority of fern growers, however, seem to be more familiar with the older names. The first botanical name I can recollect having memorised was *Goniophlebium subauriculatum*, and I still call that plant by that name despite the knowledge that it is now called a *Polypodium*.

As to choice of ferns to form the nucleus of a collection, my view is that if any particular fern is one's special favourite it should be the first fern planted, because it is one of the chief delights of having a garden that it enables its owner to grow the plants which are most admired and loved. My own choice would be to place the *Polystichums* first, *Scolopendriums* second and the variations of *Polypodium vulgare* third. Of the last named I have over thirty varieties, including three or four forms of *P. cambricum*, and I have added at various times *Athyriums*, particularly of *setigerum* varieties, and the queen of all *A. Clarissima*, *Lastreas*, *Cystopteris*, *Aspleniums* and a number of kinds which have proved hardy, although not British. These include *Adiantum venustum*, *Don*, *Cyrtomium falcatum*, and two American varieties of *Polypodium vulgare*.

I would add, here, that should any particular class of fern refuse to thrive in the garden available, it is better to abandon it and its class in favour of another which, obviously, is more suited to the soil and locality. My reason is that there is more real satisfaction in contemplating really flourishing plants than can be obtained by trying to make special patches of soil for plants which cannot grow happily in one's garden. As an example of what I mean, I recall, many years ago, having found a flourishing colony of *Polystichum lonchitis* on the Minera range of mountains in north-west Wales. I carefully lifted some healthy young plants and brought them home, but none of them thrived in my lowland garden. Eventually, they all died out. The result is I never plant this fern now, preferring to plant varieties of *P. angulare* or *P. aculeatum*, which make large, pleasing plants.

I had similar failure with *Asplenium fontanum*, and *A. septentrionale*, brought from the late George Oliver's garden at Hawick, Scotland, and these I do not try to grow now. Of course, it is necessary for a beginner to ascertain that it is either soil or situation that is the cause of failure, and not some mistake in planting, which can be rectified by exercising greater care, and my advice is that one should lift clean and replant anything which is apparently failing, before it gets too far gone for recovery. Let this be done during the period of new, young growth. That, I find, is the best time for such removal.

STRIPPING THE CAUDEX.

This operation is singled out because I have found it to be the most important part of preparation for re-planting all those ferns which grow from crowns, as distinct from rhizomes. The caudex is that stem which lengthens, gradually, with the new embryo fronds in a cluster or crown at the top. Prominent

examples are *Polystichums*, *Lastreas*, *Athyriums*, *Scolopendriums*, etc. Old, dead fronds, which are cut off at ground level, leave bases below ground. These bases increase in number and become hard and woody. In course of time they hamper attachment of young roots, which issue from the caudex, with the soil from which they should obtain nourishment, and whenever a fern is lifted for transplanting it is very important to strip or detach these bases of old fronds from the caudex. This can be done easily, although it is a task requiring some patience. Frond bases are attached to the caudex in spiral form. The correct method of procedure is first to clear away all adhering soil, then place a finger on the top of the lowest frond base, and gently press it downward. Having detached and removed that one do likewise to the next, and so proceed until the caudex is freed from all old frond bases. Sometimes a caudex will appear to be excessively stripped, but if care has been taken to break no young roots, and the cleaned plant is put into a hole large enough to take the roots without cramping, with the cluster of embryo fronds at, but not below, ground level, it will, generally speaking, make good growth. Fine soil should be carefully and closely packed, but not hardened, all round the plant, and if the fern experiences a period of drought during the first season it should be watered thoroughly, but as infrequently as is reasonable. In transplanting *Polypodiums* of the *vulgare* class, rhizomes should not be wholly buried in the soil, and all rhizomatous ferns should have their rhizomes kept very near to the soil surface. I like to transplant rhizomatous ferns just as their new fronds begin to show in curled heads. This will vary according to season. For instance, sometimes I have transplanted *Polypodiums* during April (although they are really deciduous, their fronds remain green throughout winter). Sometimes May has half done its course before *Polypodiums* can be moved, but if unable to complete transplanting by the end of May, I prefer to leave the plants undisturbed for another year. I do not like to inflict upon them the double task of making new root and grappling with summer drought. This, I admit, is due, chiefly, to my dislike of doing much watering. Although I like, now that I have bidden goodbye to days of youth, to boast of the years which many of my ferns have stood, undisturbed, in the same position, I am bound to admit that many would be the better for transplanting at lesser intervals of time.

GROWING FERNS FOR EXHIBITION.

A good many years have passed since the authorities of Southport Flower Show first introduced a number of classes for British ferns. It cannot be said that results of that innova-

tion have reflected great credit upon "The British Pteridological Society." In the beginning, the new feature promised well, and there were no less than seven entries in the largest class for hardy ferns occupying a hundred square feet of space. We felt justified in writing for the next issue of "The British Fern Gazette" (No. 11, Vol. 5, published in December, 1928) that "the benefits, accruing to our hobby from this first venture of Southport Show are undoubtedly great," but later experience has damped our view, for entries in this, the biggest class, have diminished annually, until, on more than one occasion it has transpired that one entry only has confronted the judges, and in the smaller classes for six, three, and even for single plants, in pots or other suitable containers, have shown a tendency to decrease rather than increase in number of exhibits.

It is because the suggestion has been made to me that many growers of choice hardy ferns have never attempted to grow anything for show purposes that I have decided to add this section to my article, and it is hoped that, shortly, results may show themselves in materially increased numbers of entries in the smaller classes for stipulated numbers of hardy British ferns. As with other sections, I have expressed my own views, but shall welcome the ideas of others, even contradictory.

First, choose only youngsters of known quality and removed from normal species. Grow the plants in pots beginning with young plants and, if necessary, using pots of small size for the first season's growth. Use particular care in preparing soil for potting ferns; paying great attention to combination of fibrous loam, and vegetable earth, together with enough sharp sand to enable water to pass through, but not more than enough to ensure this. Remember there is no plant-food in sand, neither does it possess power to soak up and hold moisture and dissolved plant-food. My advice is limit the addition of manure to a dusting of bone meal. This decomposes slowly, providing phosphorus, without which fern fronds lack substance and power to resist sudden changes.

A point where I differ from many growers is where it is advised to withhold any feeding until plants have reached a certain age or stage of development. I have said already that when ferns are grown for home enjoyment and for long life, I do not believe in "feeding," but when growing for exhibition it is essential that they shall be fed, even though it is probable that the same plant will be unfit for exhibition for a second season. It is just as firmly my belief that a fern which is to be fed, requires food in its young stages of growth, but it should be weak and should be applied every time the

soil in the pot becomes dry enough to demand water—not at intervals, in greater strength, and intervened with plain watering. My objection to the latter custom is that plant-food which is taken up by spongy matter in the soil, quickly combines with those plain-water applications, and may pass with surplus water, through the drainage hole without helping to feed the plant at all.

It cannot be earlier than the second season, and more probably, it will be the third or fourth, before a fern is really fit for the show bench. Meanwhile it will have been potted on, perhaps twice or thrice, until it reaches the size of pot required. (Here, let me say, it is necessary, sometimes, to be guided in this matter by the schedule of the particular show concerned.) It is a pity to put a plant into a 7-inch pot and to find later that a show schedule says that no pot may exceed six inches. Finally, let me say that as members of the British Pteridological Society it is a duty, whenever possible, to enter exhibits of hardy ferns at any show where classes are provided. It is to help those who have had only short experience in this branch of horticulture that this article has been written. Criticism of any point will be welcomed.

OPHIOGLOSSUM PENDULUM

By R. E. Holttum

This epiphytic species is very unlike the Adder's Tongue in appearance. It has limply pendulous ribbon-like fronds up to a yard long and often less than one inch wide. The fertile spikes, when present, are borne near the base of the fronds; they also are pendulous, and are commonly eight inches long. A well-grown plant may have a dozen fronds or more, hanging in a close bunch.

O. pendulum was formerly abundant in Singapore. It almost invariably grows on old plants of *Platynerium coronarium* (*P. biforme*), which attain a very large size and used to be found on many of the old roadside trees. With the widening of the roads in the past 30 years, most of the old trees by the main roads have been felled, and these remarkable ferns are less common than they used to be. It is with the relation between *Platynerium* and *Ophioglossum* that this note is mainly concerned, but it should be stated that *Ophioglossum pendulum* can also grow on old plants of *Asplenium nidus*, and sometimes in the decaying debris in the persistent leaf-bases of some old palms.

Platynerium coronarium has broad erect fronds which form a basket, and into this basket fall the dead leaves of the supporting trees. These dead leaves gradually rot. The old

Platycterium fronds do not fall when they are replaced by new ones; they curl inwards and hold fast the decaying tree-leaves they have caught. The middle of a Platycterium plant thus consists of a series of incurled decaying old fronds, and between them the decaying leaves which each in turn has caught. This decaying mass provides food for the Platycterium roots, and also acts as a sponge to hold water and tide the plant over from one rain to the next (we very rarely have as much as two weeks without rain in Singapore).

It may happen that spores of *Ophioglossum pendulum* are carried by the wind into the basket of a Platycterium plant. They are soon covered by dead tree-leaves, and in time are quite buried in the decaying mass. Under these conditions they can grow into saprophytic prothalli, if a suitable fungus is present to obtain food from the decaying leaves for them.

How long it takes an *Ophioglossum* prothallus to produce a sporophyte, I do not know, but the process is probably a slow one. The first evidence of its existence one can see is the emergence of a narrow pendulous leaf, with crisped edges, from the bottom of the Platycterium plant. This first leaf evidently has to pierce through a considerable mass of decaying leaves, and perhaps also through a few old Platycterium fronds, before it can come out into the light and air.

Once the first *Ophioglossum* leaf has appeared, it is soon followed by another, and the plant rapidly gains in size and strength. Now comes the interesting part of the story. As the *Ophioglossum* becomes stronger, the Platycterium becomes weaker. Finally you may see a very large *Ophioglossum* plant hanging from a quite dead Platycterium. I do not know whether this killing process always occurs, but I believe it is not uncommon. It seems clear that the *Ophioglossum* competes successfully with the Platycterium for the food and water provided by the dead leaves which the Platycterium catches. Possibly competition for water is the more important. Whether this is so or not, there can be no doubt that root competition between *Ophioglossum* and Platycterium is very severe; the two must share what was originally provided for the Platycterium alone, and it looks as if the *Ophioglossum* is the stronger.

The *Ophioglossum* is thus in effect a parasite on the Platycterium, though it is not strictly a parasite according to the usual definition of the term, as there is no organic connection between the two.

The *Ophioglossum* plant can live for a time after the Platycterium is dead, but ultimately it must also die, as it has no further power of collecting humus (it usually falls to the

ground). It is possible however to keep such a plant indefinitely in cultivation, if it is sprayed periodically with manure-water, and if a sufficient supply of humus around its roots is maintained.

I am not aware that this behaviour of *Ophioglossum pendulum* has been previously reported, though of course its saprophytic prothalli have been described.

NOTES AND COMMENTS

Our member Mr. A. Cochrane has sent a most interesting account of his success with an old but worth-while method of fern-growing. We commend it specially to those who live in districts where fern-growing presents difficulties; but it is a scheme that anyone could try, with enjoyment and, we hope, equal success.

"During the winter of 1942 I had occasion to read some Victorian books upon fern-growing, and therein I came across the idea of growing these plants in the walls of covered "pits" or "wells" in the ground. As I was then resident in East Fife, Scotland, which is naturally a dry area, I decided to try out this idea on a small scale, as it seemed to promise a method of obtaining freedom from the winds which were spoiling the ferns which I grew. I thereupon made a "pit" about 18 feet by 18 feet by 2 feet deep, using squared brick-size granite blocks for the walls and top surround, and a thick layer of peat was put at the bottom. This "pit" received afternoon sunshine only and was planted with *Aspleniums* which did no better than others fully exposed, and the peat bottom had to be constantly watered in the summer. My next move was to have a wooden frame constructed over the top, in which were four moveable panes of glass (I find the glass should be separately framed in wood as it is liable to break) I then planted the following ferns and one *Selaginella*:

Asplenium Trichomanes, *Dryopteris Phegopteris*, *Selaginella Kraussiana* (*Denticulata*) and two other ferns.

The two unnamed ferns are half hardy, I think, I left the "pit" five years ago, and have only seen the results lately which are, that all the above plants have thrived and that the *Selaginella* has become rather a weed. The only mishap was a broken pane of glass which allowed Willow Herb seeds to enter, and a St. John's Wort. These weeds are being removed with some difficulty. The "pit" appears to have retained an adequate supply of moisture and effectively excluded the frost. The *Aspleniums* are nearly twice the size of outside specimens, planted at the same time. I am now engaged on the construction of a much larger "well" here in Morayshire,

which will be 6 feet by 6 feet by 4 feet deep, with a concrete pool bottom and a glass top."

At the foot of page 308 in Vol. VII No 12 *L. dilata* is a mistake for *L. dilatata*; and our guess at the parentage of *Lastrea dilatata lepidota cristata* was nearly correct. In Vol. V No. 10, page 219, there is an account of its raising by the late Herbert Stansfield, by crossing *L. alpina lepidota* with *L. dilatata grandiceps*; the former of these is (or was) a form of, or identical with, *L. dilatata lepidota*. The results of our sowing seem to be a throwback to one parent, *L. d. grandiceps*.

The two Scolopendriums noted on pages 260 and 261, Vol. VII No. 10, have made some development: the plant taken from near Tintern Abbey is now normal. A sowing from the other, left in place on a wall at Shirenewton, has given six or more young plants, promising varietal form, but still too small to show what this will be.

Foliose forms of certain ferns are perhaps more common than one realizes; the form in which pinnae are close together and overlapping one another, with pinnules unusually broad and close set.

In a *Dryopteris* sowing, several male ferns came up, which appear to be developing in this way.

A seedling Lady Fern, taken near Studland in Dorset in May this year, also promises something similar; and a *Polystichum setiferum* in the village was strongly of this type, but had to be left—regretfully—as too large to move, and without ripe spores. Some day however it may be possible to secure either the plant or its offspring.

Dwarf forms are met with now and then, and may be very puzzling. A clump of a small-fronded but very vigorous-growing fern was recently seen on a rockery; it was only after some difficulty that it was identified as the Lady Fern, quite normal except in size.

SOUTHPORT SHOW, 1951

By an Exhibitor

Even when one has spent the three days, and most of them in the show, at Southport, it was found that some exhibits had been overlooked; which means that everything

was bigger than ever. Some of the display was certainly finer; and, going into detail, the first congratulation to be offered is to our member Mr. R. Kaye, who again won a large gold medal for his rock garden, as well as a new challenge cup given by the Flower Show Committee for the first time this year.

Amongst the many ferns used by Mr. Kaye, an *Osmunda* with a red stem attracted attention, as possibly a distinct species. In the competitive section in Tent 4 there was only one entry for the challenge cup, which was won by Messrs. Brookfield, showing mostly *Polystichums*, *Athyriums* and *Scolopendriums*, with some *Polypodies*.

Messrs. Brookfield's entry in class 9, of 12 Hardy Ferns, was again the only one. There was more competition in the next class for 6 Hardy Ferns, won by Mr. C. H. Rainford of Southport, who had two good *Polypodies* and a nice *Athyrium per-cristatum* in his entry. Messrs. Brookfield were second, including two fine *Polypodies*. The Rev. E. A. Elliot was third, his best plant being *P. angulare divisilobum densum*. Mr. B. Hayhurst had *Asplenium inciso-crispatum Clementii* in this class, a rare fern now; and he took the first prize in Class 11 for three *Scolopendriums*, with *muricatum*, *ramo-marginatum* and *ramo-cristatum*.

Mr. F. Scott, of Arnside, came second, with two especially good plants in his entry, *S. cristatum* Mrs. Postlethwaite and *S. crispum cristatum* F. W. Stansfield.

Messrs. Brookfield were third, and had a nice *S. grandiceps*.

In class 12, three *Polypodies*, Messrs. Brookfield were awarded first prize and Mr. B. Hayhurst a third.

The Revd. E. A. Elliot was first in class 13, for *Polystichums*. Mr. Hayward, second, had a *rotundatum*, which may be *Thompsoniae*, and Messrs. Brookfield, third, showed a nice *gracillimum cristulatum*.

There were some fine *Athyriums* in class 14, Messrs. Brookfield winning with *Clarissima*, Jones; the Horsfall *Plumosum*; and *Victoriae*. Mr. B. Hayhurst, second, showed *clarissima*, *Frizelliae cristata* and *superbum sristatum*, a specially fine plant. Mr. C. H. Rainford was third, and included a *Victoriae*.

For three Hardy British Ferns in class 15 the Revd. E. A. Elliot took first place with *A. f. f. multifidum* *P. angulare divisilobum densum*, and *Scolopendrium ramo-multifidum*, the last of these being a hybrid of his own raising.

Messrs. Brookfield were second, their best plant being *Polypodium Cambricum Barrowi*; and Mr. C. H. Rainford, third, had a good *Polystichum*.

There were fewer entries than previously in the class for one Hardy Fern, but Mr. F. Scott's first prize *A. f. f. cristatum* Cliff's variety was one of the finest specimens in any class. Mrs. Bassnett, of Tarleton, came next with *Scolopendrium crispum Campbelli*, a very nice fern. Mr. B. Hayhurst had, as third prize-winner a good old stager *A.f.f. plumosum Druery*.

Taken as a whole, the numbers are being well maintained, though there is room for many more, and the quality is still there also, but would be improved by fewer old plants and more freshly raised and younger ones. Much more could be done in the way of new crosses and consequent new varieties.

It is to be hoped that the younger members of the Society will not lose sight of this important side of our activities.

As members of the Society were in part instrumental in the introduction at this year's show of two new classes, for six and three greenhouse ferns, it may be said that these exhibits were considered to be well justified, more especially as the chief prizes were taken by our members.

The Department of Horticulture of University College, Hull, were first prize-winners in the group of six, staged by the Head Gardener, Mr. E. D. Deighton. Here, *Adiantum Farleyense* was, by his permission, selected as the subject for our frontispiece. A *Blechnum Braziliense* only two years old was also a magnificent plant. Mr. A. Livermore, of Lancaster, won second prize, his best plant being *Nephrolepis Hillii*.

Hull University also won first prize for three greenhouse ferns, with *Adiantums; scutum roseum* was specially good. Mr. B. Hayhurst, second, had *Pellaea rotundifolia* and a nice *Davallia*; and an un-named species from S. America, raised from spores, a very distinctive and attractive plant. We congratulate all exhibitors in these two new classes on the quality of the plants shown.

Since the show, comment has been made in the Horticultural Press on Southport's unique interest in our ferns. This is not perhaps quite the case, but certainly so as regards amount; one comes away feeling that the Show Committee and Officials do take a real and live interest in our enthusiasm, for which we should be most grateful. Our best thanks would no doubt be shown by more, and even better, entries.

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are :—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually once a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary,

Rev'd. E. A. ELLIOT,

South Stoke Vicarage,

Near Reading.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to :

THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
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VOL. VIII

No. 2.

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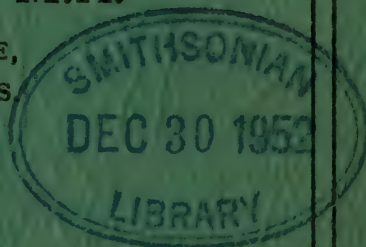
British Fern Gazette

1952

EDITED BY

Rev. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
(NEAR READING, BERKS.)



PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII.

1952

No. 2

CONTENTS								Page
EDITORIAL	1
ANNUAL MEETING	...	...	...	...	...	...	...	2
OBITUARY	...	...	...	...	...	...	...	6
INTERMEDIATE FORMS AND EVOLUTION	...	...	...	...	...	...	...	7
FERNS FOR THE ROCK GARDEN	...	...	...	...	...	...	...	12
A NOTE FOR BEGINNERS	...	...	...	...	...	...	...	17
FERN HUNTING IN THE WEST COUNTRY	...	...	...	...	...	...	...	19
SOUTHPORT SHOW	...	...	...	...	...	...	...	22
LIST OF MEMBERS	...	...	...	...	...	...	...	25

EDITORIAL

Samuel Johnson defined an Editor as one who publishes ; or revises or prepares a work for publication.

Our function is covered by the last of these definitions, and implies ability to select, or reject, material ; a function we are seldom, if ever, in a position to fulfil. Three contributors to this issue have sent articles which have been most gratefully selected and accepted. This will be the case with any which in the future are thus received—for it is unlikely that we shall ever reject a Fern contribution as quite unsuitable or as superfluous.

One of those now published is the first effort of the particular writer, and is, we think, as good as any by far more practised hands.

But the Editor would welcome, equally, ideas and suggestions from members (and this includes you, Sir or Madam, as you read it) on subjects for articles ; also questions on any point or detail, provided it is connected with Ferns.

Attention is especially invited to the Report of the Annual Meeting, and, in particular, to the Treasurer's Financial Statement and the essential need for payment of subscriptions.

Our finances need the support of every one of our members and we can only keep going by attention on their part to this, though all economies are carefully studied by the Officers concerned.

The aim kept in view in each "Gazette" is to present articles of sufficiently varied character to ensure interest, in one or another of them, to all our members.

At one time, a regular exchange list was contemplated, and it existed for a while. It could be revived if desired, and would be a means of members getting into closer touch with one another.

The failure of the proposed Exhibit of and Competition in Ferns, at the August R.H.S. Fortnightly Show, was presumably due to lack of interest. Your Secretary would, however, be glad to hear of any other reason, as otherwise no further attempt at such an event can be possible.

Our veteran member, Mr. J. Cochran, of Kilmarnock, is to be heartily congratulated on a remarkable success at a three-day Flower Show held at Ayr last summer. In a class for new or rare plants he showed a collection of *Athyriums*, raised by himself from spores, and was awarded a Gold Medal Certificate—the only such award in this class given to any of fifteen or more competitors; a very noteworthy feat.

In the previous Editorial there was mention of the lack of varieties of *Blechnum spicant*. This has been remedied to some extent by Mr. P. Greenfield, who has found two in the past eighteen months, and has very generously given me both of them. One is Lowe's *serrulata*, and the other has the barren fronds forked at their tips.

It is proposed, and probable, that the Annual General Meeting will be held in London in 1953, and during Chelsea Show week in May. Notice will be sent to members in due course, as the date and time are not yet fixed.

ANNUAL MEETING, 1952

The 49th Annual General Meeting was held at 3.0 p.m. on Thursday, August 27th, 1952, in the National Societies' tent at Southport Show. The members present were: Messrs. T. H. Bolton, J. Brookfield, C. W. Grubb, B. Hayhurst, F. Jackson, R. Kaye, and the Revd. E. A. Elliot. Mr. T. H. Bolton was elected Chairman, and signed the Minutes of the previous meeting after these were read and passed.

Regrets for absence were received from the President (A. H. G. Alston, Esq.), Mr. J. Dargue Dixon, Mr. P. Greenfield, Mr. R. Whiteside. Election of officers. Mr. Alston was re-elected President, on the proposal of Mr. Grubb, seconded by Mr. Hayhurst, by unanimous vote. Vice-Presidents. The Chairman said one must be elected in place of Mr. A. J. Macself, whose death we must all regret.

Mr. Brookfield proposed and Mr. Hayhurst seconded the election of Mr. R. Kaye, and this, too, was carried unanimously. The remaining Vice-Presidents were re-elected and the list therefore is:— Professor Weiss, the Revd. E. A. Elliot, Messrs. R. Whiteside, T. H. Bolton, Professor Holttum, Mr. R. Kaye. Mr. J. W. Dyce was re-elected Hon. Treasurer, the Revd. E. A. Elliot, Hon. Secretary and Editor, and Mr. P. Temple as Auditor. Three new names were needed on the Committee, which was re-elected with the addition of Mr. F. Jackson, proposed by Mr. Hayhurst, seconded by Mr. Grubb; Messrs. D. F. C. H. Russell and Mr. H. Wainwright, proposed by Mr. Grubb and seconded by Mr. Kaye.

Mrs. J. Healey.

Dr. S. P. Rowlands.

Mr. A. Brunt.

Mr. J. D. Dixon.

Mr. P. Greenfield.

Mr. C. W. Grubb.

Mr. B. Hayhurst.

Dr. J. Davidson.

Mr. F. Jackson.

Mr. D. F. H. C. Russell.

Mr. H. Wainwright.

The Hon. Secretary's Report was asked for by the Chairman; this was as follows:—

The past year has taken a course very similar to the previous one.

We have lost by death seven members, and one has resigned; and have eleven new ones to elect. One of those whom we have lost is Mr. A. J. Macself; it is a matter of regret that he did not live to see the publication of his book on Ferns, which has been uniformly well reviewed.

We must congratulate Mr. T. H. Bolton on giving the first broadcast talk on June 8th on British fern growing, by a member of our Society; all of us who heard it will assure him of our enjoyment. Several articles on ferns, by Members and others, have been, or will shortly be, published in the leading garden papers. The Editor-in-chief of the American Fern Journal asked me for leave to reprint Mr. Macself's article, in our last Gazette, on fern cultivation. As your Editor, I gave this permission; we have a standing leave to use any article in their journal, though this has been very little done as yet.

It is unfortunate that the proposed Fern Competition at the R.H.S. Show in August had to be cancelled from lack of entries. We must still look to Southport in this way.

The August competition was intended to provide Members with a chance of meeting, and no attempt has therefore been made to organize even a one-day excursion this year.

It will continue to be difficult to revive the former excursions which usually occupied several days, as long as accommodation remains expensive; and hard to secure, except with very long booking in advance.

A Finance Statement is to follow and this will show that we can still issue only one Gazette each year.

No outstanding find of a variety has been reported, but enquiries on ferns in general, or on some particular species, continue to reach the Society.

This at least shows that a steady interest is maintained, and we can go quietly on, with a definite belief that the tide of interest is mounting.

Mr. Kaye proposed and Mr. Grubb seconded the acceptance of this Report, and this was carried.

TREASURER'S REPORT, 1951/52

I regret I am unable to attend the Annual Meeting this year to present my Report in person.

The Financial Statement is a satisfactory one, in as much that we have kept within our income, albeit at the cost of a reduction in the issue of the Gazette to one per annum. Out of 89 paying members, 65 are up to date with subscriptions. This is 5 less than last year, but even so, there is an increase of roughly £5 in the amount paid, due to the fact that I have received several subscriptions which were very much overdue. My last Report stated that 22 members were in arrears, most of them for 3 years, but this time I am pleased to say that less than half of the defaulting members owe more than one year's subscription. Later in the year however, I shall have to submit some names for removal from our membership list unless in the meantime I receive the amounts overdue.

Our total income was £47 4s. 9d., a slight increase on last year, and in addition to subscriptions amounting to £43 10s., we are grateful to members for donations totalling £2 11s. The sale of back issues of the Gazette and one copy of Lowe's "British Ferns" brought in another £1 3s. 9d.

On the debit side there has been a big reduction in the amount paid to the printers for the "Gazette" and blocks. My last Statement shows £48 13s. under this heading, while this year the amount is £27 1s. 6d., which is the cost of issuing only one "Gazette" instead of two as formerly. The saving here has been largely swallowed up by exceptional expenses. The cost of the Stansfield Memorial Medal presented to Mr. P. Greenfield was £2 8s. 6d., and £1 10s. was paid for the photograph which forms the frontispiece of

The Chairman asked the Hon. Secretary to read the Hon. Treasurer's Report.

NEW MEMBERS: The Hon. Secretary proposed and Mr. Grubb seconded, the election of: Miss E. C. Towell; Mr. E. A. H. Knott; Mrs. E. Carrell; Mrs. N. A. Knox; Mr. G. Barltrop; Mr. A. E. Blake; Mr. R. Peacock.

Mr. Kaye proposed and the Hon. Secretary seconded: Mr. R. J. E. Veal; Mr. T. D. V. Swinscow. Mr. A. Cochrane proposed and Mr. J. W. Dyce seconded: Mr. J. L. Mowat.

All these were declared duly elected.

Two applications for membership were made during the Show, and are recorded here: Mr. A. Isaacs, proposed by the Hon. Secretary, seconded by Mr. Grubb; Mr. G. H. Rainford, proposed by Mr. Brookfield, seconded by Mr. Hayhurst.

GAZETTES: It was decided to print 150, without a plate.

ANNUAL MEETING, 1953: It was agreed to hold this in London or the South, possibly during Chelsea Show, on the Thursday evening. This would have to be confirmed, and members informed.

INFORMATION BUREAU, SOUTHPORT SHOW: It was agreed that this venture was well worth while, but more exhibits, and particularly informative ones, would be needed in 1953. The plants would be on sale at the end of the show, for the society's funds.

The meeting closed with a hearty vote of thanks, proposed by Mr. Grubb and seconded by Mr. Jackson, to the Chairman, for his able conducting of the meeting.

OBITUARY

Miss S. A. Marsh, whose death took place two or three years ago but was not known until recently, was a member of long standing; having been elected in 1909, when no less than 91 new members joined the Society. She was living then, as at the time of her death, in Ireland; where, it is understood, she had a collection of good ferns; some correspondence from her with leading officers of the Society is still extant. We much regret the loss of one who kept up an interest in ferns for so long.

It must always be a satisfaction to fern growers that Mr. Albert James Macself had completed his book on ferns; though he did not, unfortunately, live to see it published. His work as Editor of "Amateur Gardening" for 20 years, and the many books he wrote, are well known; but perhaps his last, on ferns, was his greatest pleasure. A member of our Society for 25 years, he wrote many articles for the "Gazette," full of good and practical advice; and he was the

originator of the fern classes at Southport Show from its earliest days, and a judge there for many years. As the Secretary of the Show put it "we feel we have lost a valued and a wise counsellor." In 1950 his long service to the gardening world brought him the Victoria Medal of Honour, a source of very great pleasure to him, and an award which few if any recipients have more deserved.

Mr. Edward William Platten, who died in April, 1951, at the age of 70, had been a member since 1929; up to the time of his last illness, which set in during the previous Autumn, he kept his interest in ferns and was in correspondence with us. A friend of the late Mr. Robert Bolton, he had much opportunity to know and cultivate the best varieties, which he did with success and enthusiasm. For the last 25 years he was in business as a bookseller and stationer; from his earliest days he was a keen naturalist to whom nothing came amiss, birds, animals, insects, flowers, ferns; and his archæological knowledge was equally full, issuing in 1926 in "A History of Needham Market," his home town. East Anglia, where he was well known, lost a great son in him.

J. W. Tucker

We record with regret the death last year of Mr. J. W. Tucker, at the age of 85 years. He joined the Society in 1911, when he brought under the notice of Mr. C. T. Druery a variety of *Scolopendrium* which Druery named *S. ramocristatum Tuckeri*. At the same time he contributed to the "Gazette" an article on Variegated Hartstongues.

Mr. Tucker was a printer by trade at Exeter. He started growing ferns about 1900 and subsequently formed a large collection. He numbered among his friends, John Dadds, of Ilfracombe and Robert Moule, the finder of *Athyrium* f.f. *Clarissima*.

The loneliness of his last days was mitigated by the kindness of friends to whose pleasant garden he could resort when he liked. A few of his ferns remain in that garden in memory of him.

P. GREENFIELD.

INTERMEDIATE FORMS AND EVOLUTION

What are intermediate forms? It is unfair to ask for a definition. What are "species," "varieties" and "hybrids"? Scientific authorities are not agreed on precise and comprehensive definitions for any of these terms. Their use cannot be avoided here, but the terms must be regarded as having no very hard and fast meanings.

Mainly for the purpose of cutting away some dead wood, it is desirable to look back at the study of British ferns since varieties began to be found about the middle of the last century. When a field botanist came across a somewhat abnormal form, his reaction was to set it up as a new species or at any rate as a fixed variety. It is very interesting to note, however, that the more prominent specialists, e.g., Newman, Moore and Sir William Hooker, took a broader view.

Newman expressed himself as against the multiplication of named varieties on such slender grounds as were often advanced (we are inclined to agree with his general outlook). He refers to monstrous forms of the Lady Fern being great favourites with cultivators and gives a drawing of a grandiceps form which he calls a very beautiful monstrosity—doubtless using the word “monstrosity” in a technical sense.

Moore remarks that the variability of some of the so-called species tends somewhat to the conclusion that they are insensibly united by intermediate forms. While quoting from Moore we may add that he strongly recommends the cultivation of ferns if it is desired to study them more thoroughly than is possible by examining dried specimens. His instincts not only as a botanist but also as a gardener nearly led him to the point of view arrived at in this article. Unluckily he decided that he could not depart from the time-honoured concept of a species.

Hooker in his *Synopsis Filicum*, where more than two thousand species, British and Exotic, are described, explains that he has discarded some so-called species based on very small differences.

As illustrating the attitude of botanists who apparently took little interest in ferns in the open air the following sentence from a well-known *Flora* in common use at the present day and originally published in 1859 is to the point: “It is hopeless to attempt to find out by books to what species a barren frond belongs; and monstrous developments, and deformed fronds, now common in cultivation, and found occasionally wild, are here wholly passed over.”

There is no mention as there should be—Newman saw the point of it—that the monstrosities are often very beautiful. Could anything be better calculated to dissuade general botanists from taking any interest in ferns?

After 1859 there is not much published information about varieties until we come to that in which our Society has had a hand. Lowe's later works come into this category as he was partly dependent on information which he collected from

members of the Society. It is regrettable that he listed many worthless forms. By doing so he may have discouraged some people from studying varieties.

In 1875 the British Pteridological Society, in which G. B. Wollaston was the prime mover, began to print some papers on ferns, but these had no wide circulation. Later, after the reconstitution of the British Pteridological Society in 1891/92, came the Society's Reports and subsequently the "British Fern Gazette"; and these are the only publications (unfortunately too little known) in which there is any information about varieties found or raised since Lowe's time, apart from C. T. Druery's books, which also seem to have escaped the eye of botanists in general.

This has apparently taken us a long way from Intermediates, but its purpose is to show that we have to do our own thinking on that subject in the light of greater experience of both wild and raised varieties.

It should be stated that intermediate forms, hinted at with some prescience by several of the old experts, are often mentioned by C. T. Druery, Dr. F. W. Stansfield and others among the Society's members.

What spring first to the mind as intermediates are forms between *Polystichum aculeatum* and *P. angulare*—usually looked upon as separate species. A number of ferns, not very abnormal forms, have been found showing, often not at all distinctly, some characteristics of both *aculeatum* and *angulare*. Now it is not reasonable to regard these forms as hybrids in the ordinary sense. Rather would it appear that the process which has led to the variation has released some factor which had hitherto inhibited one of the "species" from showing itself. This supposition is strengthened by the astounding performance of the "angulare" referred to in an article by Dr. F. W. Stansfield in Vol. I of the "Gazette." This plant, the well-known *P. angulare plumosum grande*, Moly—resembling *angulare* much more than *aculeatum*—in the spring of 1909 produced its usual fronds from one half of the crown, while the other half remained dormant. When the dormant half developed in July, it produced fronds of normal *aculeatum* character. This apparent instability between *aculeatum* and *angulare* must be held to indicate that neither is a true species. The argument is not vitiated by the fact that plants of the normal forms are widespread in great numbers. The two ferns must apparently be regarded as subspecies, or something less than that, with the real species—whether extinct or not—somewhere behind them. (That

aculeatum in any case derives from *P. lonchitis* is reasonably certain in view of the appearance of very early fronds of *aculeatum* which has led to the occasional collection of the fern by mistake for *lonchitis*).

The probable explanation of the mystery is that in *aculeatum* and *angulare* there are two potentials. When these are in a certain balance we get ordinary *aculeatum* and ordinary *angulare*. If the balance is upset, however slightly, one potential affects the other and the plant produces a spore which results in an intermediate form. This dual personality could perhaps likewise explain at least partially the extraordinary behaviour of Dr. Stansfield's fern.

At this point it is worth while to note that the growth which proceeded after the check had exceptional resistance to encounter, and that the expenditure of energy resulted in a different form of frond. Now, this peculiar procedure is not without parallel. If fern fronds are damaged or removed entirely, as they often are by hedge-trimmers, a plant may produce abnormal fronds resembling perhaps a *congestum* or a *grandidens*. The energy developed for the repair has led to a temporary change in form. Probably there is a similar explanation to be attached to the frequently observed difference between spring and autumn fronds in cultivated ferns. And apart from the obvious case of the *grandiceps* type of variation there are several forms which show increased variation towards the top of the fronds.

If what has been said about the peculiar behaviour of the *Polystichums* is substantially correct, it affords an interesting glimpse into evolution. The processes of evolution are so extremely slow that we are apt to forget that they are still going on, and we thus lose sight of the fact that some plants are slowly changing their status. Obviously there must be stages in the development when it cannot be said that a plant is a species, subspecies or variety in any narrow sense of those terms, and where this uncertainty is known to exist it would appear desirable to provide for it in a system of classification. But no doubt many years of morphological, cytological, and possibly chemical, investigation will be necessary before the mysteries attaching to ferns and their variations are fully explained. As scientific botanists have recently stated, with the advance of knowledge of plants, the study of them becomes more and more complicated.

At the moment it seems difficult to extend research about intermediates to other genera of ferns except perhaps the British *Lastreas*, and these are fairly obviously not on the same footing as our *Polystichums*. Among them the only fairly straightforward case appears to be the intermediates between

L. filix-mas and *L. pseudo-mas* (otherwise known as *paleacea* or *Borreri*). Wollaston was aware of intermediate forms, although he ignored the difficulties of identifying them when describing characters for his three classes *filix-mas*, *pseudo-mas*, and *propinqua*. It may be that the adoption of the name *pseudo-mas* was due to his suspicion that the fern was very closely related to *filix-mas*.

It may be that the two last-named ferns are in some such relationship as *Polystichum aculeatum* and *P. angulare*, with the mountain fern *Lastrea propinqua* as an older form. The writer is fairly well placed for observing the many minor variations in *filix-mas*, but *pseudo-mas* is not very common in the south of England. Our member, Mr. F. Jackson, has collected some specimens of both *pseudo-mas* and *propinqua* in Borrowdale, and Dr. Rowlands has kindly sent a typical plant of *propinqua* also collected in the Lake District. If members who have access to these ferns in other districts would do likewise, their help would be much appreciated. What are particularly wanted are specimen fronds of the most robust and nearly evergreen *pseudo-mas* which are available, and normal and abnormal (if any) fronds of *propinqua* (this fern is of course completely deciduous) with a brief description of the habitat. If any supposed varieties of *propinqua* are in cultivation, information about them might be useful. The writer possesses one variety only—a neatly crested form.

As regards *L. dilatata* and its allies, which form a section of our *Lastreas* distinct from the *filix-mas* group, the Society's Treasurer and the writer, in the course of a recent visit to Devon and Dorset have been able to pay a good deal of attention to *L. dilatata*. It seems probable that this fern varies in one direction towards *L. æmula* and in another towards *L. spinulosa*, with intermediate forms, possibly according to the type of habitat. Here again more field work is desirable. True *æmula* and true *spinulosa*, it may be remarked, are far from common.

P. GREENFIELD.

A CORRECTION

In an article on "Wild Fronds" in Vol. VII, number 10, page 250, it was stated that a *Polystichum angulare* found with extraordinary fronds had ultimately reverted to normal. This fern has since approached full development and proves to be a *sub-decompositum*. The desirability of making this correction will be evident on perusal of the article on Intermediate Forms in the present number.

P. GREENFIELD.

FERNS IN THE ROCK GARDEN

The modern rock garden as we know it today is not regarded usually as a home for ferns, the chief emphasis being on a lavish display of colour, with Alyssums, Aubrietas, Saxifrages and many other denizens of the hills and garden forms thereof, miniature conifers and dwarf flowering shrubs planted to resemble a section of Alpine landscape on a small scale.

One looks in vain in that fat two-volume work by the High Priest of Rock Gardening, the late Reginald Farrer's "English Rock Garden" for any reference to ferns as rock garden plants, although there are many ferns which may be regarded as true alpinists.

In fact, a rock garden, to be a true miniature of an alpine scene, is actually incorrect if suitable ferns are omitted from the planting scheme.

One cannot visualise a mountain stream without its verdant fringe of graceful fern fronds, all manner of species in the lower reaches, Mountain Male Fern and Blechnums, Parsley Fern, Aspleniums and Polypodiums in the rock crevices as one goes higher, and the rare Woodsias appearing only in the higher rocks, three thousand and more feet above sea level.

Quite recently I saw a wonderfully beautiful mat of the Beech Fern high up in the gorge of Cam Spout some two thousand feet up the slopes of Scafell.

In Victorian times it was the thing to have a fern rockery but this usually took the form of a dismal and uninspired dump of clinkers, brick-burrs and the like, covered more or less with soil and making an ideal home for mice, and winter quarters for snails. Generally the ferns had to fight it out with Ivy and Perriwinkle and only the stronger coarser forms were able to survive. Not that the brick-burrs were not excellent for fern culture, their rough surface and water-holding capacity encourages root action, but their aesthetic value is nil. The higher cost of using well weathered natural rock is, after all, a first cost which does not recur, and the greater pleasure it gives is well worth the extra expense.

The range of species and varieties which one can use in the rock garden depends very largely on the size of rock used, and the extent of the garden.

In such a rock garden as that constructed at Friar Park, near Henley-on-Thames, covering several acres, there is no hardy fern which could not be used with good effect and without upsetting the proportions of the garden picture.

Such a garden can be possessed by very few and the average rock garden in the present-day garden probably contains about ten tons of rock and occupies some thirty to fifty square yards. In such a garden it is better to confine planting to the dwarfer species and varieties, though if a pool is incorporated in the scheme, a Royal Fern can usually be placed to advantage in the foreground.

The soil in which ferns thrive always contains a large proportion of humus, contributed in nature by the decay of their own discarded fronds, and a generous admixture of leaf-mould to the existing soil when planting will repay the trouble many times. The majority of ferns are lime tolerant, but a few suitable species including the Parsley Fern and the Blechnums demand lime-free soil and must be provided for accordingly.

Incidentally, one need not fear the effect of using limestone rock for these lime-haters if the soil itself is lime-free, the rock is for all practical purposes insoluble—otherwise it would have disappeared long ago from our limestone hills. An interesting example of this occurs in my own village, where the lime-hating *Erica cinerea* grows very freely on top of the limestone cliffs in thin turf, its roots in contact with the rock.

A list of species and varieties which I have used in planting rock gardens may be of interest and the first is our native Parsley Fern, *Allosorus crispus*. I make up a mixture of slate, sand and peat for this plant and I find that it thrives here. If your water supply is hard you must not use it for watering lime-hating plants or you will kill them.

Rain water from the roofs must be conserved for watering such plants until they become established, when they need no further watering except perhaps in very droughty weather. Parsley Fern should be planted in a sloping or vertical crevice or even in dry walls built with soil between the stones. In the North, full sun or very slight shade suits it.

All the *Aspleniums* are very suitable plants but require some little care in planting, a mixture of leafmould and crushed old lime mortar makes a good rooting medium. *Asplenium trichomanes* and its crested and incised forms, look very dainty in the shadier crevices, again planted in sloping or vertical crevices. When established one can look for self sown Spleenworts appearing in the rock fissures. *Asplenium Adiantum-nigrum* and *A. Ceterach* will stand much more sun and the latter thrives here in full sun though the more luxuriant and deeper green fronds develop better in slight shade.

AA. germanicum and *septentrionale*, when obtainable—one used to get imported plants quite easily in pre-war days—give pleasure to the genuine fern lover but cannot be said to give an effect except in a very small scale garden such as one constructed in a trough.

A. ruta-muraria can be tricky to establish, it requires just sufficient soil to bed the roots firmly between two stones, and small well-rooted plants are essential to success.

A. viride grows high up on top of the Yorkshire limestone fells in full sun—though as often as not in thick mist at least part of the day—but I fancy slight shade in the lowland garden is an advantage. It is not difficult to establish. *A. marinum* seldom succeeds far away from the sea though it can be grown quite happily in a cold house rockery.

The *Athyriums* in numberless variations are all fine in the large rock garden, but for the smaller garden it is best to confine oneself to the dwarfer kinds. The smaller growing forms of *A.f.f. Frizelliae* always give a dainty airy touch when spraying out from some rock crevice so that the fronds can hang down somewhat. The very congested and imbricate forms are very useful and have that somewhat indefinable character, a kind of tightened up, ready for wind and weather look one associates with true mountain plants. Again the densely crested *A.f.f. acrocladon*, *A.f.f. caputmedusae* and similar forms are very suitable and here at any rate they do very well in full sun or shade. In rich soils, which are not quite right for rock garden plants in any case, *Athyriums* put on a greatly increased stature and while they look fine plants, they can get out of scale with the rock garden picture. This applies also to most of the *Lastreas* or *Dryopteris*, the Male Ferns, though here again there are very dwarf, tightly congested forms which are appropriate. *L.p.m. crispa cristata* is not too large, and I always think *L.f.m. cristata Martindale* looks at its best in a rock garden setting, especially in the larger garden, it will keep fairly dwarf if in not too rich a soil.

L. rigida as it grows on the sunny tops of our local limestone fell is short and compact and its dull sage green fronds tone well against the light grey rock. It may require fairly spartan conditions in the lowland garden to keep the same dwarf habit.

All the *Blechnums* are suitable, the trouble to-day being to get hold of plants—apart of course from the wild type—and there are various imbricate and dwarf crested varieties which look very well in lime-free pockets. They should be planted

low down in damp peaty soil. If any reader happens to have lots of *B.s. trinervium-coronans* to spare I should like to get in touch! The plumose and serrate forms can make quite large plants in congenial surroundings and perhaps are better treated with the care they deserve in a frame or cold house rockery.

The Polypodiums are all splendid, *PP. dryopteris* and *phegopteris* in the shadier positions perhaps under the shade of a Japanese Maple, or in north facing crevices. *P. calcareum* prefers sunshine and fresh air and is a true mountain plant. The two former species are, I think, better without lime in the soil. They like plenty of humus amongst small stones.

P. vulgare in all its forms is an ideal rock garden fern and may be used in crevices or on narrow ledges. They also have the advantage of forming their new fronds in the late summer, remaining evergreen. The lacy *P.v. pulcherrimum*, and the various forms of *P.v. cambricum* look very well indeed; while *P.v. bifido-cristatum*, *P.v. semilacerum* seem indestructible and rapidly make large masses of attractive foliage.

The *Polystichums*, *angulare* and *aculeatum*, generally are too large, though here again there are the dwarf congested and congestum grandiceps forms of *P. angulare* excellent in every way, and evergreen in all but very bleak districts. There are several small, heavily crested and conglomerate forms cropping up which I have seen lately whose names I have not ascertained as yet. I have one small uncrested form with entire pinnae under the name of *P.ac. lobatum* which seldom exceed six inches. The name is under suspicion but so far I have not found another name for it. *P.an. lineare* and *P.an. confluens* are suitable, their very narrow pinnae giving a charming effect.

Some of the acutilobe forms of *P. angulare* such as Hartley's, are quite permissible as the fronds hug the ground instead of standing erect, a habit characteristic of the plumose divisilobes. These again can be used in the shady rock garden in good soil, as young plants, though eventually they may grow too large for the small rock garden.

Polystichum lonchitis is a very handsome dwarf species which here seldom exceeds six inches; it increases very slowly and can be used quite safely in the smaller garden with great effect.

I almost forgoi to mention *Cystopteris*. I grow *Cystopteris fragilis* and its crested form very freely in my rock garden, and the taller *C. montana* also. They make a compact mat

of delightful neat frondage and never appear out of scale. The rarer *C. Dickeana* is delightful and seldom exceeds four inches and so can be used in the trough rock garden where it looks charming. *C. regia* I have not met, but should be just as useful apart from its interest as a very rare fern.

The Hartstongue, *Scolopendrium vulgare*, or *Phyllitis scolopendrium*, as I believe it should be named nowadays, more familiarly referred to as "Scollies" by the fern fraternity, provides hosts of splendid dwarf varieties indispensable in the fern-lover's rock garden. While the majority grow lush in good soil, under glass when "grown on" for exhibition, in the more austere conditions obtaining in the rock garden few forms grow out of proportion. They are to my mind best used as individual plants to give an accent rather than allowed to mass into drifts like the *Polypodiums* and *Cystopteris*. They never look so well as when they grow out of limestone crevices. They will stand full sun, in the north, but attain a deeper green and more luxuriant growth in the shade.

The very rare alpine *Woodsia* I have never seen, though I have grown one or two N. American species and these are tiny things just right for the trough or sink rock garden, though they are rather hard to come by.

There are several foreigners which I would not care to omit from my rock garden, such as *Lomaria alpina* and its crested form; *Adiantum venustum*, a hardy Maidenhair from Kashmir; the grand N. American *Adiantum pedatum*, wonderfully beautiful in rich leafy compost in the shady parts of the larger rock garden. I have also been delighted with some of the N. American *Pellaeas* which, so far, I have not allowed out of the alpine house, where grows also the interesting *Cheilanthes lanatum*, a fern found growing in very dry habitats, and covered with thick felting to reduce loss of water. How this fern manages to achieve reproduction puzzles me. I have never succeeded in germinating spores in the usual close damp conditions necessary for germinating our own fern spores.

I have no doubt omitted many most suitable varieties in this brief review of the possibilities of ferns as rock garden plants, but I trust that I have shown that here is a wealth of material to suit varied tastes in adorning the modern rock garden. I think that a rocky background is often the best setting for many of our ferny treasures, adding interest to a collection, and indeed providing the only suitable position for many of our smaller species.

R. KAYE.

A NOTE FOR BEGINNERS

By the Editor

Several times lately the remark has been made to me "It is the names of Ferns that is so difficult, and puts one off."

And yet the people who have said this, will have spoken quite easily about Rhododendrons and Delphiniums, Magnolias, Dianthus, Chrysanthemums, and so on; that is to say, using words derived from Greek or Latin, simply because these names have become familiar, from garden books, papers, and catalogues, and from seeing these plants, or owning them. In other words, knowledge of Greek or Latin is unnecessary. These names, in one way, are merely labels, and all that has been called for has been the effort to memorise the plant and the name-label sufficiently well to apply the one to the other. It is found very soon that if there is a real interest in gardening, this effort is not severe, and soon becomes a pleasure. Now ferns are at a disadvantage here, just because they are, mostly, not familiar objects of the catalogues, gardens, nurseries or flower shows; and further, to some extent, because they often have no popular English name but are "labelled" by not one but two Greek or Latin words, invented by botanists.

Taking the first of these points: there are a few ferns with at least more or less familiar names: the Male Fern, the Lady Fern, the Hart's Tongue, the Polypody, Bracken, and possibly Osmunda. A little thinking will probably call up a mental picture of some of these, seen in a garden or on a country walk.

Now turn to the second point. One thing the botanists have aimed at in their "name-labels," the choice of words which are descriptive of some outstanding detail in the plant.

For instance, Hart's Tongue: *Scolopendrium vulgare*: the common (vulgare) *Scolopendrium*: the fern-plant, extremely abundant where it grows, that has lines on the back of its frond that resemble *Scolopendra*, Centipedes. Or *Polypodium vulgare*, the Common Polybody, more widespread still: in suitable places sending up from its travelling rhizome many feet—its very numerous stalks. Male fern is simply the English for *filix-mas*, the second (specific) part of its botanic name: *filix*=fern, *mas*=male. *Lastrea filix-mas*: Botanists are human, and one of them wanted to honour a French confrère, M. Delastre. So the word *Lastrea* was invented.

Bracken: *Pteris aquilina*. Your florist will sell you a *Pteris*: it is *the* fern, even if he has no others. It is *the* fern,

all over England. That is what it means in Greek, simply "fern." Cut a stalk across, in section: there is a marking visible that fancifully looks something like an eagle (*Aquila*) with outspread wings.

Royal (*regalis*, *regal*) Fern: *Osmunda*: the legend is that a waterman named Osmund hid his wife and children from marauders in a colony of these magnificent plants.

The Lady (*femina*, *feminine*) fern (*filix*): *Athyrium filix-femina*. Partly plain enough: partly not. *Athuros* in Greek means "without a door." E. J. Lowe is the only author so far found who tries to explain the reason for this naming: he gives it as signifying "open." Perhaps it is best left at that, and an effort at memorizing "and no questions asked." Talk about *filix-femina* to a Pteridologist and he will know what you mean.

But what is that word just used?

Well, *Pteris* is recognizable now: and a —logist is, one who studies. Entomologist—a butterfly (insect) man. Ornithologist, a bird watcher. So, Pteridologist is, one who studies ferns: a "fern fan:" and there are two more Genera which he is likely to cultivate, to be explained now. *Polystichum* is one: pronounced *Pollystickum*: *Poly*—has already been translated as meaning Many: *stichum* is from another Greek word, a line or a row: so the fern is, one that has many lines, or rows: but what these are, is not clear. It may refer to the numerous pinnae, or to the many pinnules; this does not distinguish it well from the Male Fern, which also has many such lines or rows, and in general outline resembles *Polystichum*. Here, the *specific* names of the two common species helps: *aculeatum* and *setiferum* or *angulare*. *Aculeatum* means thorned, prickly, sharp-pointed. Look closely at the pinnule of *P. aculeatum*: it is tipped with one spine stronger and stiffer in appearance than the rest. Now look at *P. setiferum*. This, too, has spines, but they are more like bristles: which is just what the name means—"bearing bristles." *Angulare*, the older name, comes from the angular shape of the pinnule.

One at least of the *Aspleniums* is a general favourite. *A. Trichomanes*, the Maidenhair Spleenwort. The botanic name hardly needs translation or explanation, since this is already provided in the English one. Spleenwort is a herb for the spleen; one to cure disorders of the spleen.

Now here is a genus with a really descriptive botanical name, *Cystopteris*. It is said that the English name, Bladder Fern, is simply a book translation of these two Greek words;

Cyst is a bladder, pteris is a fern: and they describe the indusium or membrane which covers the spore-cases, and is bladder-shaped.

The nine Genera here mentioned are those most likely to be grown, at first; except Bracken, which should be kept out of a garden! We hope to go on with other names, and species: but there are several more difficult ones to come, and these have been chosen partly as comparatively simple and straightforward.

FERN HUNTING IN THE WEST COUNTRY

In September this year I spent a most enjoyable week fern-hunting with Mr. Greenfield. Mr. Peter Temple joined us for a few days, and travelled down in the car with me on the Saturday to Ottery St. Mary, where we met Mr. Greenfield at the London Hotel. Incidentally, this is a very comfortable hotel and we were well looked after by the proprietors and a very willing and cheerful staff. Everyone took a great interest in our activities, although I think we must have been regarded as rather eccentric to spend our time in such a manner.

Eccentric or not, we had a really good time together, and during the week a lot of ground was covered. It was concentrated hunting from the word "go"—in little more than half an hour after our arrival in Ottery St. Mary we were out in one of the local lanes for a short time before dinner, and for the next seven days we thought ferns, talked ferns, and hunted ferns almost to the exclusion of everything else. We were in a good centre and, having the car, could give consideration to all the likely areas up to a radius of about 20 miles. Actually, most of our time was spent in the area near Axminster, and with the aid of an old geological survey of the district, we were able very successfully to follow the lime, and to note the variation which occurs in ferns in soils containing this substance.

On Sunday we started the ball rolling with a visit to a colony of *Lastrea aemula* known to our Editor, and by him shown to Mr. Greenfield earlier in the year. Assiduous hunting revealed that the station was more extensive than was expected, and it was a pleasure for me to see, for the first time, this lovely fern growing in the wild. The rest of the day was spent in the Chideock district, where after a sandwich lunch eaten in the car during a violent thunderstorm, we worked the lanes with their ferny banks and hedgerows. We were in *Polystichum angulare* country, and the foremost thought in our minds was the discovery of a good variety. We

joked all week about the divisilobe or pulcherrimum that awaited us in the next lane, but they still wait there—in the lane we did not visit! We did have some modest success on that first day, but not with *P. angulare* which persisted during a scrutiny of thousands of plants in presenting a very normal appearance within the narrow range of variation which is usual where the species abounds. Before the week was over we had developed a very good eye for *angulare*, and were quick to spot anything abnormal.

After *P. angulare*, *Scolopendrium vulgare* was the next common fern in the lanes, followed by *Polypodium vulgare*. Our first real find was an undulatum of the former species, a large vigorous plant with narrow fronds over 2 feet long, flourishing on a bank in the midst of a thick hedge. After a struggle it was successfully excavated. The next discovery was a *Scolopendrium bifidum*, but during the days that followed we were to find many plants of *bifidum* and *multifidum*, most of them inconstant. A few of the best constant forms joined the collection in the boot of the car. *Polypodium vulgare* gave us some slightly crenate varieties, but again we were to make much better finds.

Two days were devoted to the lanes around Hawkchurch, chiefly to the north of the village, and we had our best hunting in this district. Minor variation was quite common, and kept us alert to the possibility of making a good find. *P. angulare* exhibited a variety of forms, sub-tripinnate, setose, obtuse, imbricate and foliose, all very graceful but none of them, with two exceptions, sufficiently divergent from the normal to warrant removal. One was quite a fair example of *obtusissimum*, found growing on a wall in Hawkchurch with fronds 12 to 15 inches long. This plant was collected, but we may find that in cultivation it will develop larger fronds and become more normal. The other was rather a fine tripinnatum found near Chardstock. It had been badly slashed by the hedge cutters, but one frond was intact. I regard this plant as our best find, and am looking forward to see how it develops next year. I have made a sowing of its spores in the hope that something good may come up.

Polystichum aculeatum is fairly common in the Hawkchurch area, but no varieties were noted. Mr. Greenfield was particularly interested in the fact that *P. angulare* with *aculeatum* characteristics was of frequent occurrence, and he was continually drawing my attention to such plants. Our Editor too, has pointed out that my *P. angulare obtusissimum* seems to be as much *aculeatum* as *angulare* and this certainly appears to be so. Bifid and multifid *Scolopendriums* seemed to abound, and a few fine specimens were brought back with

us, as well as a typical plant of Lowe's duplex. *Polypodium vulgare* gave us our most exciting hunting in the Hawkchurch lanes, and many colonies were discovered where normal fronds were in the minority. We had high hopes of a good find among them, but although we were disappointed in this respect, several interesting serratums crenatums and bifids were collected.

A day spent in the Widworthy and Wilmington lanes gave us more good hunting which again produced some variety in *P. vulgare*, and a *Lastrea Filix-mas* with broad serrate pinnules was collected. The feature of the day was the abundance of *Asplenium trichomanes*. The banks were festooned with it, and even where the hedgerows had not been cut back, pulling aside the jungle of growth revealed the trichomanes underneath, growing even more luxuriantly in the deep shade. Our visit to the West Country coincided with the hedge cutting season, and it was difficult to decide whether the cut or the uncut lanes suited our hunting better. The rampant untouched growth in some of them very effectively hid the ferns, except for a stray frond or two which had struggled through to the light, and it was a slow job hunting in these conditions. On the other hand where all this growth had been removed, it was easier to see the ferns that were left, but we had to judge the qualities of angulare by the stumps of fronds, and the chances of finding a crested *Scolopendrium* were cut to nil by the hedger's hook. *A. trichomanes* was easily hunted under the latter conditions, being small enough to escape mutilation, but showed no variation apart from an odd bifid frond. Mr. Greenfield found one crested plant.

Some first-rate ferns have come from Ottery St. Mary in the past, but our finds in this district were of a much humbler nature. One lane we hunted did seem to offer possibilities, and Mr. Greenfield quickly found a magnificent plant of *P. angulare tripinnatum* which I now possess. The lane leading up a hillside to a wooded summit, was literally full of tripinnatums and sub-tripinnatums, but none quite so fine as our first find. A good *P. angulare sub-acutilobum* and a large multifid *Scolopendrium* were found and added to our collection. Above the lane the wooded slope was damp, and under the trees flourished magnificent specimens of *P. angulare*, *Athyrium filix-foemina*, *Lastrea dilatata*, and *Scolopendrium vulgare*.

A break from our routine hunting was a pilgrimage made to the River Dart near Holne Chase, to pay homage to *Osmunda regalis* which grows there in a manner befitting its name. The plants, however, looked anything but royal, and had been badly damaged by the August floods which created

such havoc in other parts of the country. We also visited a station of *Hymenophyllum tunbridgense* which I discovered 16 years ago, and I was pleased to find the fern still growing happily, and covering a small cliff with its luxuriant and moss-like growth.

Altogether, we had a really full week, and the weather on the whole was kind to us. Apart from the thunderstorm on our first Sunday we had only one wet day, on the Tuesday when Mr. Temple left us to return to London. Our only hunting that day was done during the brief dry spell on the road to Sidmouth Junction, where he caught his train, and Mr. Greenfield and I found shelter from the weather in Exeter Cathedral, and were able to enjoy a leisurely study of this beautiful edifice.

On the following Sunday morning we said goodbye to the West Country, and set off on the homeward journey, taking with us our finds packed safely in the boot of the car, and many memories of a happy week of fern hunting.

J. W. DYCE.

SOUTHPORT SHOW, 1952

A novelty this year was a space, in the Tent (2) set apart for various National Societies, which the Show Committee granted to our Society.

Several of our members kindly and helpfully took turns of duty there, and answered many questioners on many points, or had conversations with them. The full effect, if any, may not be apparent at once ; but it is quite possible that this experiment will be tried again next year, perhaps more elaborately, particularly in the provision of specimen Ferns for display.

In the Show Tent (4), some Classes had poor entries, both in quality and number : even allowing for the peculiar weather of last summer and its ill effect on ferns, one could not help feeling that plants were not and had not been, up to the usual standard in some cases. However, one of the judges remarked on the good quality of most plants, and some excellent specimens were exhibited.

In Class 9, the first prize and the Society's Challenge Cup went to Mr. J. Brookfield for a group composed mainly of *Athyriums*, *Polystichums*, *Scolopendriums* and *Polypodies*. Some of the *Athyriums* were very nicely crested. The second prize went to Messrs. J. Brookfield and Son, for a group made up of similar varieties, with even better *Athyriums*.

Class 10, for six hardy British ferns, was very deservedly won by Mr. B. Hayhurst, who showed a fine *A.f.f. Victoriae*, a splendid *Scolopendrium vulgare Drummondii*, and a very well grown *Polypodium vulgare pulcherrimum*. Mr. C. H. Rainford was second, and Mr. J. Brookfield third.

Class 11, three *Scolopendriums*, also went to Mr. B. Hayhurst; his *S. crispum cristatum fimbriatum* was a very "solid" plant, and his *ramocristatum* particularly clean and fresh. Mr. J. Brookfield came second, the only other competitor in this Class: and he also took first prize in Class 12, three *Polypodies*, of which his *Cambricum Barrowi* was the best. There were no other entries here.

The Secretary was first in Class 13, three *Polystichums*, with *aculeatum gracillimum*, *angulare acutilobum*, and *ang. divisilobum*, Bland. Mr. J. Brookfield, second, had a *gracillimum cristulatum*, and Mr. B. Hayhurst, third, a grand plant of *ang. grandiceps*, Ivery. Mr. J. Brookfield was the only entrant in the next Class, for three *Athyriums*, of which *plumosum* Druery was the most interesting.

The Class (15) for three *Lastreas* was very disappointing in entries; it has been revived again this year after long omission, but only attracted two competitors, Mr. B. Hayhurst first and Mr. J. Brookfield second: the former's best plant was *pseudo-mas angustata*, a crested variety. The Secretary was again first with three hardy British varieties in Class 16, showing *Polypodium vulgare omnilacerum* Oxford as the best of his plants. Mr. B. Hayhurst came second, and his *A.f.f. plumosum* Druery was perhaps the best plant in all the hardy British exhibits. Mr. J. Brookfield followed, his best plant being *Polypodium vulgare Cambricum Barrowi*. A fourth competitor was Mr. C. H. Rainford.

Class 17 was another old one revived this year, and four competitors entered this, for three hardy normal British ferns: the Secretary coming first with *Polystichum Lonchitis* as the best of his plants; Mr. J. Pye, of Lancaster, next, with a very nice pan of *Polypodium vulgare*: Mr. J. Brookfield third, showing amongst his three an *Osmunda*. Mr. B. Hayhurst was the fourth competitor.

The next Class, No. 18, drew six entries, showing one British fern, any kind or variety, cultivation under glass permitted. First prize went to Mrs. M. L. C. Bassnett, of Tarleton, for a big *Scol. crispum* Campbelli. Mr. Hayhurst, second, had a *Polystichum angulare plumosum*, and Mr. C. H. Rainford a *P. angulare acutilobum*. The wording of the regulation for this class was altered this year, with the idea of finding a solution for the question whether *Adiantum capillus-Veneris*

is hardy or not. It is British, but in most parts of the country it is not hardy in the same way as, e.g., a *Polystichum*: but can be grown anywhere under glass.

However, we gather that this effort at a solution does not, generally, commend itself: and the regulation may be altered, in some way, again in 1953. It is for the Show Committee to decide this, but the Editor of the Gazette will welcome any views from our members.

In the Classes for greenhouse ferns, the Department of Horticulture, Hull University, won first prize for six *Adiantums*: *Bausei* and *Fergusonii rubrum* were specially notable. Mr. J. Brookfield was second, his best plant being a *Davallia*. Hull University came first in Class 20, with three *Adiantums*, *Bausei*, *Farleyense*, and a very attractive species, *Peruvianum*. Mr. Hayhurst's best were *Adiantum Kensington Gem*, and *Onychium Japonicum*. Mr. J. Brookfield, third, had three *Adiantums*. In Class 21, for one plant, Hull led with *Adiantum Collisii*; Mr. J. Brookfield had an *Adiantum*; and Mr. Hayhurst a *Cibotium Sheidii*. Mrs. Bassnett and Mr. Rainford also had entries.

It may be fairly remarked that the proportion of *Adiantums* in these Classes was overdone this year; but the regulations here do not concern us as a Society, and the comment is personal and unofficial.

E. A. ELLIOT.

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are :—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually once a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary,

Revd. E. A. ELLIOT,

South Stoke Vicarage,

Near Reading.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to :

THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
VINCENT SQUARE, LONDON, S.W.1

VOL. VIII

No. 3

- The -

British Fern Gazette

1953



EDITED BY

Rev. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII

1953

No. 2

CONTENTS

	Page
EDITORIAL	55
FRONTISPIECE : Polystichum Lonchitis Asplenium viride ...	56
SECRETARIAL... ..	58
OBITUARY	58
ANNUAL MEETING, 1953	60
FERNS IN CENTRAL ETHIOPIA (Dr. Schelpe)	61
FERN HUNTING (Mr. J. W. Dyce)	64
EVOLUTION IN FERNS (Dr. Swinscow)	65
FERN NAMES AND PRONUNCIATION (Editor)	69
INTERMEDIATE FORMS AND LASTREAS (Mr. P. Greenfield) ...	72
FERNS IN WEST YORKSHIRE (Dr. Swinscow)	72
SOUTHPORT SHOW, 1953	76
LIST OF MEMBERS	78

EDITORIAL

The contributions to this number of the *Gazette* are of the varied nature which we aim at presenting to our Members, and of the kind which has always been taken as the "type" for our publication: so that it is hoped this will be considered by Readers to be a really good issue.

From an Editorial angle, they are so numerous that a note of special thanks to the writers is called for: with a continued appeal that this need may be met in order that the *Gazette* can be issued more often.

Our Treasurer has told us that this is financially possible: please make it so materially.

Membership of our Society remains at much the same in numbers as it was a year ago: gaps due to several regretted deaths, to resignations and to lapses, have been filled in the way which we believe is the best one in a Society like ours.

That is, the personal effort of existing Members; which ensures an interest such as no amount of advertising seems able to do. Here again is a way in which all of us can help; and many, who are duly and heartily thanked, have done so during the past year.

We are specially glad to record that our Membership abroad has recently been considerably extended and is perhaps as large as it ever has been. In the past two or three years, spores have been exchanged with some of these Members, with interesting results which, even if not strictly part of our declared objects, do remind us of an important side of our activities.

That is the fact that we are a mixture of Botanists and Gardeners; not wholly and entirely one or the other, but a combination of both. The Botanist alone can get to the deepest secrets of plant life; but in our opinion a plant cannot be fully understood and known unless its study includes its growth from seed or spore to maturity: which is where the Gardener element in us comes in.

In this connection, we congratulate our Member, Mr. A. Isaacs, on winning a first prize for a pot plant, against twelve entries, a second prize for three pot plants, a second for one Hardy British Fern and another for three of them; all in open classes, at Liverpool Show.

We understand this is his first venture with Ferns, and that he has secured a Class in his Local Flower Show this year for a Hardy British Fern. This is a tribute to his determination to advance our interests.

The Editor has two copies for sale of Vol. I of the *Gazette*, at 16/- each post free, and one of Vol. VI at 10/-, also including postage.

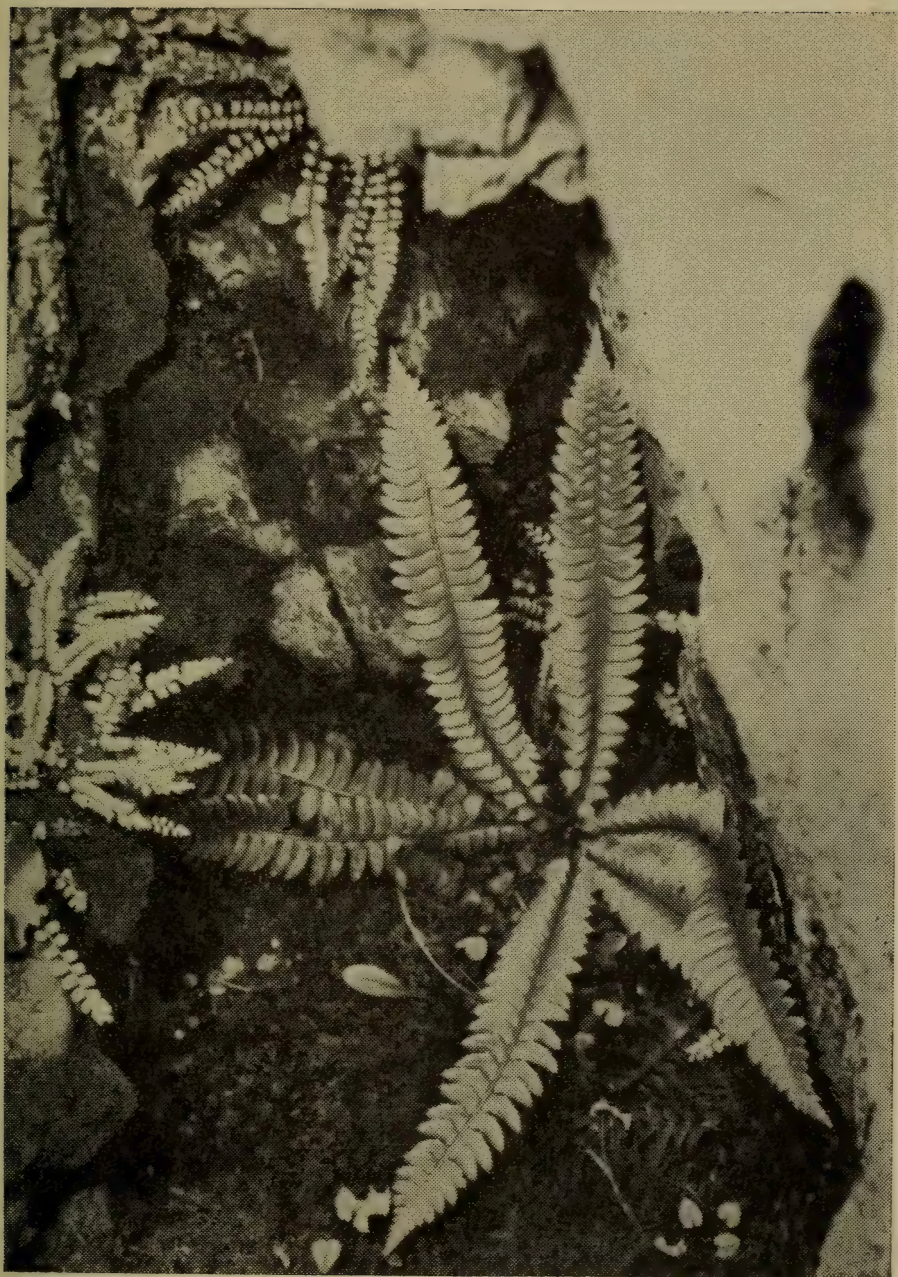
Although it is referring to something written by oneself, attention is called to the Secretarial page, as one or two matters of some importance are included there.

Among the Contributors to this issue, to all of whom we are indebted, Dr. Schelpe is one of our newest Members, and we think his article will be of interest as showing that some of our Ferns have a rather unexpected range. Dr. Swinscow has not only given us two articles, differing widely in their character, but has most kindly offered to meet most of the cost of the plate which he himself has provided. It appears to us one of the best plant photographs we have seen.

OUR FRONTISPIECE

The photograph was taken in the Pennine range in Yorkshire, and shows two species typical of high hill country in one case, *Asplenium viride*, and of still higher or mountainous ground in the other, *Polystichum Lonchitis*.

It was the latter, as much the rarer of the two in England, which was the special subject chosen for photographing, and the frond details are unmistakably shown.



Polystichum Lonchitis : *Asplenium viride*

SECRETARIAL

This is our lightest duty, although there has been a considerable amount of correspondence during the past year. That is always welcome and we hope it will not only continue but expand.

But we do ask Correspondents not to send us Subscriptions.

These have to go in any case to our Treasurer, Mr. J. W. Dyce: if sent to the Secretary, the only gainer is the Post Office, as the transaction costs an extra $2\frac{1}{2}$ d. each time.

Requests reach us from time to time for bound volumes of early *Gazettes*. These seldom appear as items in Catalogues of second-hand books: though some time ago the three first volumes were listed in one of them. Prompt enquiry was too late, the books were already sold and, we believe, to someone in France.

However, as stated in the Editorial, there are three copies available: and we ask Members, who see any offered, from at least Vol. I to Vol. V, to secure them up to say 18s. each, and, if not wanted, to re-offer them to the Secretary at cost price.

It is regretted that our recent Summer Letter was dated 1952: this, of course, should have been 1953.

OBITUARY

The death, on January 7th, 1953, of Professor F. E. Weiss, F.R.S., F.L.S., V.M.H., took from us one of our most illustrious, as well as one of our most esteemed, Members.

The *Times* obituary spoke of his wisdom and understanding and endearing personality: with this, all who knew him, even slightly, would fully agree. These were outstanding characteristics to the end of his long life—he was 87—which will remain a valued memory.

At the age of 21 he became Assistant Professor of Botany at University College, London; and six years later, Professor of Botany at Manchester University.

During his 38 years there, he was for two years Vice-Chancellor, and a very able one. When he retired in 1930 and went to live near London, he was made President of the Linnaean Society; and as such honoured us by accepting our Society's Membership.

His interest in horticulture continued and he filled important posts in the Royal Horticultural Society, at whose Fortnightly Shows he was often to be seen, unfailingly enthusiastic. His V.M.H. was awarded in 1947: in addition to these titles, he was D.Sc. and LL.D.

Three weeks later, on January 22nd, the gardening as well as the botanical world suffered a further heavy loss by the death of Mr. Thomas Hay, C.V.O., V.M.H., at the age of 78.

He was born in Banffshire, and in his early days was occupied in some of the most important Scottish gardens.

It was in 1911, at the age of 33, that he was appointed Superintendent of Greenwich Park; after eight years there, he went to Regent's Park. In 1923 he became Superintendent of Hyde Park and St. James's Park, with charge of three Royal gardens as well, one of them being Buckingham Palace gardens. A great botanist, he gathered together and grew to perfection seed from all over the world, particularly from Northern India. Honours justly bestowed on him included the R.H.S. Neill prize in 1932, the V.M.H. in 1924, the Veitch Memorial Medal (gold) in 1940, M.V.O. in 1927 and C.V.O. in 1938.

He was one of six notable men who were offered, and honoured us by accepting, Honorary Membership of our Society in 1927-1928: all of them eminent in botany or horticulture. To secure their interest was a matter of great satisfaction then, which passing years have only increased.

Amos Perry, V.M.H.

In our 1952 half-yearly letter reference was made to the death of Mr. Amos Perry, which was then, happily, an incorrect report.

It is with the utmost regret that it must now be recorded as having taken place on August 21st, 1953; a regret which will be shared by plant-lovers abroad as well as in our own country. Perry's Hardy Plant Farm has long been a source of enjoyment to gardening enthusiasts, and the catalogues issued with life-like illustrations made one feel that one was actually at the Nursery and going round it with Mr. Perry himself.

Awards of all kinds, including Gold Medals, came to him and the members of his family who so ably supported him: perhaps his water-plants were most widely known and particularly associated with his name. His own favourites were *Hemerocallis*, Day Lilies, which he studied, grew, and improved, for some 60 years and to which he devoted himself after retiring from business in 1945.

Flowers from his plants of these were brought daily to him and gave him pleasure to the last.

To Members of our Society, which he joined some 35 or more years ago, his interest in Hardy Ferns was of especial value.

A message of sympathy has gone to his family in the name of our Society, which we are sure will be endorsed by us all.

This was held on May 21st, 1953, in the Board Room of the British Museum (Natural History) by kind permission of the Trustees.

A report of it was included in the June Letter, but there are certain items which should be repeated here.

The President, Mr. A. H. G. Alston, B.A., F.L.S., was unanimously re-elected.

Dr. S. P. Rowlands was elected Vice-President, and the list is now:—Rev. E. A. Elliot, Messrs. R. Whiteside, T. H. Bolton, Professor Holtum, Mr. R. Kaye, Dr. S. P. Rowlands.

The Committee is as follows:—

Mrs. J. Healey	Mr. B. Hayhurst
Mr. A. Brunt	Dr. J. Davidson
Mr. J. D. Dixon	Mr. F. Jackson
Mr. P. Greenfield	Mr. D. F. H. C. Russell
Mr. C. W. Grubb	Mr. H. Wainwright.

The Treasurer, Mr. J. W. Dyce, the Auditor, Mr. P. Temple, and the Hon. Secretary and Editor, Revd. E. A. Elliot, were re-elected.

New Members, duly elected, are:—

Mr. T. M. W. Alexander	Sir G. C. F. Ramsden,
Mr. F. J. Healey	C.I.E., I.C.S., retd.
Mr. A. Isaacs	Mr. D. H. Thompson
Miss A. Kippax	Mr. G. Thompson
Mr. R. Peacock	Dr. P. Villaret
Miss J. P. Pugh, B.Sc.	Mr. G. A. Wilson
Mr. G. H. Rainford	Mr. C. V. Morton

Since then, the Treasurer has drawn up a Balance Sheet to June 30th, 1953, ending our financial year.

FINANCIAL STATEMENT, 1951/52

[illegible]

The following have joined the Society during the summer:—

Mr. T. C. L. Longman, Mr. E. St. Clair-Morford, Mr. G. A. Wilson, Mr. A. H. Hewitt, Mr. F. J. Healey.

FERNS IN CENTRAL ETHIOPIA

by

E. A. C. L. E. SCHELPE
(University of Cape Town)

During September, 1952, the author visited Ethiopia as a guest of the British Consul in Addis Ababa. In the course of this visit, a number of different vegetation types in the provinces of Shoa and Arussi were studied, particular attention being paid to pteridophytes. The collection made during these travels is housed in the British Museum (Nat. Hist.), London.

The salient topographical feature of central Ethiopia consists of the grassed highlands at about 8,000 ft. altitude with ranges of rounded hills rising to over 10,000 ft. in altitude. To the north-west of Addis Ababa, gorges of the tributaries of the Blue Nile cut into these highland plateaux. The ground decreases in altitude to the south-east of Addis Ababa, and extensive areas of dry savannah are encountered at altitudes below 6,000 ft. South of Adamitullo, a number of large lakes are set in a landscape of thorn savannah. Yet further to the south, between Neghelli and Sheshemana, one finds more moist country with *Podocarpus* forests on the flanks of old volcanic massifs.

The rainfall in central Ethiopia is markedly seasonal. In Addis Ababa, with a total annual rainfall of about 50 inches, there is a rainy season extending from mid-June until the end of September. It is most probable that considerably less precipitation is experienced in the thorn savannah, but in the forest region in the vicinity of Sheshemana, the total rainfall is considered to be of the order of 60 inches per annum.

HIGHLANDS

In the vicinity of Addis Ababa, rock outcrops occurring about streams in rolling grassland were found to be inhabited by mats of *Selaginella abyssinica* Spring around the bases of the boulders, and by *Asplenium demerkense* Hieron. growing in the rock crevices. At higher altitudes on the Entoto Range (10,000 ft. alt.) a wider variety of ferns were found. On the flanks of the range, occasional plants of *Adiantum poiretii* Wikstr., *Asplenium æthiopicum* (Burm.) Becherer and *Asplenium monanthes* L. grew terrestrially among scrub in the gullies. Near the summits of the range, a few large plants of *Dryopteris schimperiana* (Hochst.) C.Ch. were seen among a

dense scrub of *Hypericum*. Much of the summit is devoid of trees and shrubs and only *Dryopteris schimperiana*, *Dryopteris bergiana* (Schlecht) O. Ktze. and *Osmunda regalis* L. were found along a streambank in this area.

Mulu Sayu (8,000 ft. alt.), on the edge of the highlands about thirty miles north-west of Addis Ababa, was also visited. Here the montony of the grasslands is relieved by occasional patches of mixed *Acacia* savannah. In the undergrowth of this savannah, *Cheilanthes farinosa* Kaulf. appeared frequently, and *Asplenium æthiopicum* was occasionally seen growing about the bases of trees or as a humicole. Two epiphytic ferns were present, *Polypodium lanceolatum* L. and *Loxoscaphe theciferum* (HBK) Moore, the former being the most abundant. The deeply shaded and sheltered banks of a stream below a waterfall in the surrounding grassland had been colonised by a few plants of *Adiantum capillus-veneris* L. and *Pteris dentata* Forsk.

Another locality which was visited was the crater lake at Bichoftu (6,000 ft. alt.) below the general level of the highlands. In the steep grassland and scrub leading up to the crater rim from the lake, *Cheilanthes farinosa* was the most common fern. In the crevices of rock faces and on boulders occurring among this grassland and scrub, colonies of *Actiniopteris australis* (L.f.) Link, *Asplenium æthiopicum* and *Selaginella abyssinica* were frequently observed. *Cheilanthes coriacea* Decne., another species found in this locality, appeared to have more marked habitat preferences in this area and was only found in crevices of boulders composed of a more open textured volcanic rock.

RIVER GORGES

The Boli Gorge, near Mulu Sayu, contains one of the tributaries of the Mugher River, which flows into the Blue Nile. The walls of this gorge descend steeply for two thousand feet from the edge of the highlands and are covered with tall scrub or savannah of various densities while forest has established itself in ravines and near the river at the bottom of the gorge. On the uppermost, sparsely wooded slopes, a few plants of *Adiantum poiretii* and *Dryopteris crenata* (Forsk.) O.Ktze. were seen. In the denser scrub lower down, ferns became more abundant especially in the more moist areas. Mats of well developed *Selaginella abyssinica* were common in densely shaded positions and plants of *Actiniopteris australis*, *Anemia schimperiana* Presl., *Hypolepis schimperii* Hook. and *Pellaea viridis* (Forsk.) Prantl occurred frequently in the undergrowth. In one moist, heavily shaded ravine, the rock races provided habitats for *Adiantum capillus-veneris*, *Arthropteris monocarpa* (Cordem.) C.Chr. and *Asplenium protensum* Schrad. The forest at the base of these cliffs and

slopes was comparatively poor in pteridophytes. However, mats of *Selaginella abyssinica* were frequently seen and *Anogramma leptophylla* (L.) Link and *Asplenium schimperianum* Hochst. were found in quantity on some moss covered boulders in this forest.

SAVANNAH

As one might expect, the large areas of dry, dense, thorn savannah along the chain of lakes south of Adamitullo are extremely poor in pteridophytes. On the shores of Lake Shala (Lago Scialla) at an approximate altitude of 5,000 ft., a few ferns, including *Actiniopteris australis* and *Pellaea calomelanos* Link were found around outcrops of rock. No ferns were seen either along the shores of the lake or in the undergrowth of the thorn savannah.

Further south in the more moist country between Neghelli and Sheshemana, a number of ferns were found on the banks of a small river traversing a landscape of grassland and scattered groups of trees. *Asplenium æthiopicum* and *Loxoscaphe theciferum* occurred as humicoles among the rock faces, while mats of *Selaginella abyssinica* and colonies of *Arthropteris orientalis* (Gmel.) Posth. and *Pellaea viridis* grew around the bases of boulders along the streambanks.

PODOCARPUS FOREST

One of the extensive forests which occur on the flanks of the volcanic massifs in the Arussi Province, roughly between Sheshemana and Cofole, was visited. The dominant forest tree is a species of *Podocarpus*, some being over a hundred feet high. Below the upper canopy formed by these trees, a dense growth of moss-draped Hammamelidaceous shrubs fifteen feet high was found surmounting a thick undergrowth.

Grassy glades which penetrated the lower edges of these forests had been colonised by the ubiquitous "bracken," *Pteridium aquilinum* (L.) Kuhn. No arborescent ferns were seen, although *Cyathea deckenii* has been recorded from the Caffa forests. (Pichi Sermolli, 1940). In the forest proper, the undergrowth contained large masses of *Selaginella abyssinica* and plants of *Adiantum poiretii*, *Athyrium schimperi* Mougl., *Cheilanthes farinosa* and *Dryopteris schimperiana*. On streambanks in the forest, *Asplenium usambarense* Hieron. and *Dryopteris bergiana* were seen occasionally.

A salient feature of these *Podocarpus* forests was the great abundance of epiphytes. The quantity of epiphytic ferns in these forests was found to be even greater than that observed by the author in the "Camphor" forest of Mount Kenya. (Schelpe, 1951). Among the low-level epiphytes in deep shade, *Asplenium protensum*, *Loxogramme lanceolata* (Sw.) Presl and mats of *Trichomanes melanotrichum* Schlecht. were

recorded. Of the mid-level and high-level epiphytes, the most curious was *Drynaria volkensii* Hieron. with its dimorphous fronds, some being large spore producing fronds and others comparatively smaller, humus-collecting leaves. The most abundant mid-level epiphyte was *Arthropteris monocarpa*, but *Asplenium æthiopicum*, *Polypodium lanceolatum* and the narrow-leaved *Vittaria volkensii* were also frequently seen in this epiphyte horizon with their rhizomes embedded in the wet, humid moss cushions. In the higher branches of the trees, *Lycopodium dacrydiodes* Bak. occurred quite frequently, and both *Drynaria volkensii* and *Polypodium Lanceolatum* tolerated this drier and more exposed environment.

ACKNOWLEDGEMENTS

The author wishes to express his gratitude to Lt.-Col. A. C. Curle and Mrs. Curle for their hospitality and for enabling the author to participate in these excursions in Ethiopia. Also, the author wishes to thank Mr. A. H. G. Alston of the British Museum (Nat. Hist.), London, for aid in the identification of specimens.

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FERN HUNTING

By J. W. DYCE

Plant hunting is not everyone's choice of job or pastime, but to some of us, including the writer, it can be a most absorbing pursuit. We read the books of Kingdon-Ward, Farrer, and the other great hunters, and long to follow in their footsteps, but we have not acquired the necessary qualifications, and our feet are set in other ways of life. It was given to me, however, to sample the thrills of plant-hunting during a short expedition through Sikkim, the "Fairyländ of the Himalaya," and over the high Himalayan passes into the Chumbi Valley in Tibet, and to revel in the wealth of both tropical and alpine plant life to be found in that region.

Our overcrowded and thoroughly explored island very seldom offers *new* plants to the searcher nowadays, but the thrill of discovery can be captured in the hunting for and

re-finding of our rare plants, and in establishing new district records. Ferns do seem to offer something more, however, for in the hedgerows and woodlands, and wherever else ferns flourish, the disturbing influence which has given us so many wonderful varieties in the past is still at work, and beautiful finds are still there to reward the diligent hunter.

But where are the fern hunters to-day? One of the objects of our Society is the organisation of field meetings to search for ferns, and in the past these were regarded as an important feature in the Society's activities. From what I have read and heard, I don't think there was ever a large body of hunters in our membership, but they were keen, enthusiastic men, knowledgeable in ferns, and to them we owe most of the treasures we possess—or *did* possess! Many of these now seem to exist only in our memories, and we are doing nothing to replace the losses. As a Society, we seem to be living very much in the past, resting on the laurels of the great figures in our history.

We must shake off this apathy so evident in our midst during the post-war years. Last Autumn I welcomed the opportunity to indulge once once again in what is to me the most exciting plant-hunting offered in these islands, when I spent a week with two fellow-enthusiasts hunting ferns in the West Country. We are going back—many times, and we want others to join us. Our Northern members who may not feel disposed to travel so far from home, have their own hunting grounds within easy reach, and it would be good news to hear that the North can again produce keen hunters. The fern varieties are there to be found—in the North and in the South, and with an influx of new varieties we can quicken the fern cult into new life, and awaken a new interest in these graceful plants.

EVOLUTION IN FERNS

No more important book on ferns has appeared in the last twenty years than Professor Irene Manton's study of their mechanisms of reproduction, inheritance, and evolution.¹ Although it was published three years ago, the book is of such exceptional interest that a note on it even now may be useful if it brings the work to the attention of fern lovers. Its subject is the structure and function of the chromosomes in British ferns, horsetails, and lycopods.

The chromosomes are seen in dividing cells as mobile elastic bodies of diverse size and shape, though most are rod-like at some stage. There are good reasons for believing that each is rather like a string of beads, each bead representing the basic unit of inheritance, the gene. In every cell of the

ordinary fern there are two sets of chromosomes. These cells are referred to as diploid. The term is contrasted with haploid, which describes spores and sex cells (or gametes); they have only one set of chromosomes. The prothallus of nearly all ferns is also haploid. Some exceptions to the rule are referred to below. Each pair of genes in the cell may be said, as simplification, to control a particular structure or function in the organism. For example, the shape of the frond in *Polystichum setiferum* has been shown to be modified by a single pair of the genes.²

The minute size and large number of chromosomes in the cells of most ferns presented Professor Manton with technical difficulties greater than in any other group of plants. Man, for instance, has 48 chromosomes, most lilies 24, paeonies 10 or 20, berberis 28 or 56. Yet that diminutive fern the Adder's Tongue was found to have one of the highest numbers yet discovered in the plant kingdom—over 500. A tropical relative, *O. pendulum*, was later found to have over 700.³ Professor Manton provides for the first time exact records of the chromosome numbers in all species of British ferns and allied plants. This in itself is a piece of laboratory virtuosity that must evoke high praise.

In addition a study of the numbers of chromosomes in the various plants enables her to make some general inferences of great importance to their systematic classification. A clear-cut example may show this best. Plants in any given genus usually have closely related numbers of chromosomes. Every species in the genus may show the same number, for instance; but more often the species have numbers that are multiples of some number basic to them all: in other words, they have a common factor. All British species of *Dryopteris* seem to have multiples of 41 as their chromosome number. *D. aemula* has 82, one kind of *D. Borreri* has 123, *D. Filix-mas* has 164, and another kind of *D. Borreri* has 205. Now the Beech Fern has 90. It has always been an awkward fern to place, and this number shows why. For it is quite unrelated to the number found in any British ferns—and particularly unlike the numbers found in *Dryopteris* and *Thelypteris*. On these and other grounds Professor Manton suggests that it should be separated again into a different genus (as it has been before) and become *Phegopteris polypodioides* Fée.

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- 1 *Problems of Cytology and Evolution in the Pteridophyta*, Cambridge University Press, 1950, 50s.
 - 2 Andersson-Kottö, in *Manual of Pteridology*, p.287, The Hague, 1938.
 - 3 Manton, I., in *Symposia of the Society for Experimental Biology*, No. 7. Cambridge, 1953.

Mention above of two kinds of *D. Borreri* leads us to consider polyploidy. The meaning of that term is simply this: Whereas the cells (gametes and spores always excepted) of most plants contain the usual two sets of chromosomes, some plants have more than two sets in each cell. Varieties of *D. Borreri* are known with two, three, four, and five sets of chromosomes, for example, and octoploid dahlias (eight sets) are commonly grown. The degree of polyploidy in a genus can be used to clarify the relationships between the species in it, and here Professor Manton's discussion of the genus *Polystichum* may be cited.

P. Lonchitis and *P. setiferum* have a chromosome number of 82, while that of *P. aculeatum* is 164. These numbers incidentally are the same as those found in *Dryopteris*, and this suggests a fairly close relationship between the two genera. Supposed hybrids between *P. Lonchitis* and *P. aculeatum* growing in Switzerland and known as *P. illyricum* were verified to be hybrids by the finding that their chromosomes number was 123. That is, 41 chromosomes from the gametes of *P. Lonchitis* combined with 82 from the gametes of *P. aculeatum* to give *P. illyricum*—a triploid with 3×41 chromosomes. Further, a fascinating deduction followed from another observation. Study of cell division (meiosis) during spore formation in *P. illyricum* showed that the 123 chromosomes split up into 41 pairs and 41 singles. The pairs were believed to derive from one set of *P. aculeatum* chromosomes and one set of *P. Lonchitis*. The inference is that *P. aculeatum* contains a set of 41 chromosomes almost identical with the 41 chromosomes that constitute a half set in *P. Lonchitis*. In other words, *P. Lonchitis* is a parent of *P. aculeatum*, and the *aculeatum* species is derived from the *Lonchitis* species together with another one. The only other one available is *P. setiferum*. Professor Manton therefore concluded that *P. aculeatum* is derived from the conjunction of 41 chromosomes from *P. Lonchitis* with 41 from *P. setiferum*, and that then doubling of the chromosomes occurred to give the present complement of 164. This brief sketch of her work on *Polystichum* perhaps indicates the kind of insight that cytology can give into evolutionary problems.

Another feature of the work is Professor Manton's account of apogamy. Here the fern springs from the prothallus without the fertilization of a female cell. As mentioned above, in most ferns the spore, prothallus, and gametes are all haploid. They must be, indeed, if fertilisation is not to result in a progressive doubling of chromosome sets in successive generations. But when apogamy is obligatory for the fern, as it is for *D. Borreri* and the Beech Fern, then spore and prothallus have the same number of

chromosomes as the body cells of the fern itself. This work confirms and amplifies other work correcting a singular error which, set on its pervasive course in 1907, is to be found perpetuated even so recently as 1950 in the fourth edition of Bower's well-known textbook *Botany of the Living Plant* (p. 508). Faulty observation led to the mistaken belief that the prothallus of apogamous ferns was haploid and that the nucleus of one of its cells migrated to fuse with the nucleus of another. The combined nuclei were thus supposed to endow a cell with the full diploid complement of chromosomes, this cell being the origin of the new fern plant. In fact, the prothallus is diploid, and it is so because the spore is diploid. The formation of these peculiar diploid spores is described and fully illustrated by Professor Manton. During formation of the spores there is an incomplete nuclear division in which the chromosome content is momentarily doubled. Subsequent division thus provides spores with the same number of chromosomes as the sporophyte—that is, the fern.

Her studies of obligatory apogamy lead Professor Manton to point out that, first, it is genetically exceedingly complex ; for it involves both fern and prothallus, and it does not seem to exhibit any simple Mendelian ratios. Secondly, because it has arisen in a number of quite unrelated species of ferns, it is interesting evidence of parallel evolution.

Some other notable discoveries of Professor Manton's may be summarised briefly :—

Three distinct types of *Polypodium vulgare* have been found in Britain containing 2, 4, and 6 sets of chromosomes. Their fronds and sori showed slight differences.

The exact status of *Dryopteris abbreviata*, sometimes considered to be merely a small mountain form of *D. Filix-mas*, was clarified by the discovery that it has half the number of chromosomes that the Male Fern has. This difference, combined with the fact that when crossed with the Male Fern it gives a highly sterile hybrid, is a strong argument for making it a separate species.

Two kinds of *Asplenium Trichomanes* were found, one with 72 and the other with 144 chromosomes. The form with the greater number of chromosomes has the longer fronds.

Ceterach officinarum also has 144 chromosomes, as have most of the *Aspleniums*, which is further evidence of its close relationship to them.

Of the two, *Woodsias*, *W. Alpina* with 164 chromosomes has twice the number of *W. Ilvensis*. And *W. ilvensis* is probably one parent of *W. alpina*, the other being at present unknown.

Cystopteris is full of complexities—there are three different types of spores and two different chromosome numbers.

This short and oversimplified note gives hardly any better idea of the wonderfully intricate and harmonious structure of Professor Manton's book than does a prothallus of the fern. For ultimately she is concerned not so much with ferns as with life itself. We may count ourselves fortunate that in her study of the problem of life she chose the pteridophyta to investigate. The theme running through her book may perhaps be well summarized in the two sentences that conclude it:

"The problem of evolution is thus only one aspect of a larger problem of life, of growth and of reproduction. And if we could really know how an organism contrives both to develop and to transmit its likeness with such surprising fidelity from generation to generation we might after all have unravelled the greater mystery."

DOUGLAS SWINSCOW.

FERN NAMES AND PRONUNCIATION

By the Editor

In our last issue, on page 45 (19 in actual print), more derivations were promised. These will appear in time, but what seems a more pressing need is being dealt with first: the pronounciation of our Fern names. This has become apparent from several recent conversations, and though not of interest to all our Members, there may be one or two instances which may surprise old initiates.

The writer himself may be in error at times and is quite ready to be corrected.

As a preliminary note: the names are botanical, and are in origin Latin, Greek, or Latinized-Greek.

There are two forms of the letter e in Greek; also of o; and it is necessary to use the signs ˇ for short e and o, — for the long sound, in some cases.

As far as possible, the phonetic system will be used; and the names are in alphabetical order.

Adiantum capillus-Veneris.

Add-e-ăn-tum cap-ill-us Venn-ěr-ıss.

Anogramma leptophylla (*Gymnogramma*).

Ano-gramma leptophylla: all vowels short. (*Gymnogramma*): both G and g as in Gander; all vowels short. Gym—as in gimlet.

Asplenium. Asp-lee-nee-um. The first two syllables are run together in practice, Asplee-nee-um.

A. marinum: mă-reye-num.

A. Trichomanes. Try-kõm-an-eez.

A. viride. Vĩ-rĩ-dee.

A. obovatum (lanceolatum), ōb-ō-vay-tum, (lăn-cee-ō-lay-tum).

A. Adiantum-nigrum. Add-e-ăn-tum-nye-grum. Grum—as in grumble.

A. Ruta-muraria. Roo-tah mewr-air-ee-ah.

A. Breynii (germanicum). Bray-nee-eye; germanikum; all vowels short.

A. septentrionale. Sepp-ten-tree-oh-nay-lee.

Athyrium. Ath-īr-ee-um. Ath, as in Athens.

A. Filix femina. Fye-licks fee-mīn-ă.

A. alpestre. ăl-pěss-tree.

A. flexile. All vowels short: flēx-ill-ě.

Blechnum spicant. Blēk-nŭm spy-kănt.

Botrychium Lunaria. Bô-trīk-ee-um Loo-nair-ee-ah.

Bô, as in Bone. This is usual, but Bô, as in Botany is also correct.

Ceterach officinarum. Kett-err-ăkk off-iss-e-nair-um.

Cryptogramme (Allosorus) crispa. Kryp-toe-gram-me (Al-owe-sore-us) kriss-pa. kryp, as in Crypt; Al, as in Albania.

Cystopteris. Siss-top-ter-iss; ter, as in term.

C. fragilis. Fraj-ill-iss.

C. regia. Ree-ji-ah.

C. Dickieana. Dick-ee-ar-nah.

C. montana. Mon-tar-nah.

Dryopteris (Lastrea). Dry-op-ter-iss (Lass-tree-ah).

Op, as in opera; ter, as in term.

D. Filix-mas. Fye-licks mass.

D. Villarsii (rigida). Vill-ar-see-eye. Vill, as in villa; ar, as in art; rigid-ah.

D. cristata. Kriss-tay-tah.

D. dilatata. Dye-lah-tay-ta.

D. spinulosa. Spin-ewe-low-sah.

D. aemula. ee-mew-lah.

Gymnocarpium (Polypodium). Gim-no-car-pee-um. Gim, as in Gimlet.

G. Dryopteris. See preceding genus.

G. Robertianum. Roe-ber-tee-ay-num. These two species are Oak Fern, Limestone Polypody.

Hymenophyllum. High-men-owe-fill-um, or, High-men-offill-um.

H. tunbrigense. Tun-brij-ěnn-see. More usually spelt tunbridgense.

H. peltatum (Wilsoni unilaterale). Pëll-tay-tum Wilson-eye ewe-nee-lat-err-ay-le.

Lastrea. See Dryopteris.

Ophioglossum. Owe-fee-owe-gloss-um.

O. vulgatum. Vull-gay-tum.

O. lusitanicum. Loo-sit-an-ik-um.

Osmunda. Oz-mun-dah. Mun, as in Monday.

O. regalis. Re-gay-liss. Re, as in regal.

Phyllitis (Scolopendrium). Fill-eye-tiss. P. Scolopendrium (S. vulgare). Skoll-owe-pen-dree-um. Skoll, as in Scholar.

Polypodium. Poll-ee-pöd-ee-um. Poll, as in Polly.

P. vulgare. Vull-gair-e.

Polystichum. Poll-iss-tick-um.

P. setiferum (angulare). Set-if-err-um ann-gu-lair-e.

P. aculeatum. Ack-ewe-lee-ay-tum.

P. Lonchitis. Lonn-kye-tiss. Lonn, as in long.

Pteridium (Pteris). Pter-íd-ee-um (Ptě-ris). Very nearly = terrace.

Scolopendrium. See Phyllitis.

Thelypteris. Thell-ipp-teris.

T. palustris. Pal-us-triss. This is the same as Lastrea Thelypteris.

T. Oreopteris. ör-ee-öp-teris. Or, as in Orange. This is Lastrea Oreopteris, or L. montana.

T. Phegopteris. Feg-op-teris. Feg, as in leg. This is Polypodium Phegopteris.

Trichomanes. Try-köm-an-eez.

T. speciosum (radicans). Spēs-ee-owe-sum (rad-ee-kans). Rad, as in radish.

Woodsia. Wood-see-ah.

W. ilvensis. Ill-venn-siss.

W. alpina. Al-py-nah.

These names are taken from *Welsh Ferns*, by Hyde and Wade, but older, more familiar names have been added, in brackets, so that difficulties in this way should be lessened.

It will be noticed that the *final* syllable is always pronounced separately.

INTERMEDIATE FORMS AND LASTREAS

When, as we think, we proved in the article on intermediate forms in the last issue, that *Polystichum aculeatum* and *P. angulare* were subspecies and very closely related, and referred incidentally to Lastreas, we were not aware of the results of a comprehensive cytological examination that had been made of the *Filix-mas* group in Lastreas. We did, however, hint that *filix-mas* and *pseudo-mas* might prove to be subspecies and that further research was necessary to determine precisely the status of the related *propinqua*. There were reasons for being tentative. Much of the considerable variation in *filix-mas* in the wild does not suggest mixed blood, while some of it decidedly does; though the impact of *pseudo-mas* is not very evident. And without further research (in the direction suggested) the extent to which *propinqua* varies cannot be determined, though it seems to be very limited; and there is probably no clear run of intermediate forms.

It is interesting to compare this misty picture with what has been found out cytologically. The provisional conclusions, without technical particulars, may suffice for the present purpose. They are that *filix-mas* is not a single species but an assemblage of forms varying in their appearance and cytological structure, and is itself in a restricted sense probably a cross between two earlier species, one of which may have been *propinqua* or a close relation.

It is satisfactory to find the internal investigation of these ferns supporting the external investigation, even, if we may venture to say so, to the extent of being a little misty. The expression "assemblage of forms" aptly describes the peculiar character of variation referred to in the first paragraph, so far as observation has gone. But no doubt more field work is highly desirable.

P. GREENFIELD.

FERNS IN WEST YORKSHIRE

The Craven area of the Pennine chain in the Yorkshire West Riding is exceptionally rich in ferns, several of them very rare. And it is beautiful country to walk over for anyone who enjoys, as I do, the proximity of rock and sky so characteristic of some western uplands. Entirely deserted by man except for the occasional shepherd, the high plateaux and crags offer a refreshing silence, while lower down countless curlews beguile the walker with their sad whistling cry. Great outcrops of carboniferous limestone give the area an unusually varied flora, and of special interest to the fern lover are the great clefts, or "grikes," which centuries of

rain have worn away in the stone. These cracks, often six feet deep and a foot or more across, run irregularly all over the plateaux, giving the limestone blocks cut off by them the appearance of some gigantic crazy paving. Traversing them requires care, especially as many interesting plants grow there and may divert the attention momentarily.

The two mountains of Ingleborough and Penyghent stand side by side here for a few miles north of the market town of Settle, where I stayed for a week last June. Having a small car, I motored each day to suitable points whence I set off on foot to explore the country, my chief purpose being to photograph the ferns in their haunts.

A brief visit to Colt Park Wood, in Ribblesdale, filled my first morning. It is a curious construction, being entirely paved with enormous blocks of limestone cleft by fissures from which grow the trees—chiefly ash. It has probably remained unchanged for many hundreds of years. Ferns grow in abundance there, and even though I saw only the commoner species, their luxuriance made them a spectacle to remember. In a small area I noted the following: *Dryopteris dilatata*, *D. Filix-mas*, *Polypodium vulgare*, *Asplenium Trichomanes*, *A. ruta-muraria*, *Cystopteris fragilis*, *Phyllitis Scolopendrium*, and *Pteridium aquilinum*. A slight drizzle was falling and converting the already wet vegetation into a floor so slippery that I reached the edge of the wood again with some relief. A false step among those grikes was something to avoid, especially as I was alone.

Making my way two miles eastwards, I came to Linn Gill, a narrow gorge traversed by the Cam Beck, a tributary of the Ribble. Here I changed into rubber boots and set off. The river bed itself is often the walker's only way, for there is no path through the gorge. At the entrance I found some fine clumps of *D. Borreri* and the Lady Fern. Near them, incidentally, was a group of that most charming of the horsetails, the yellowish-green Wood Horsetail, *Equisetum sylvaticum*. If not rare, it was certainly much less common in this region than the Field Horsetail, *E. arvense*.

The river was greatly swollen—or so I should judge—by three weeks of almost continuous rain, and I managed to get about two-thirds of the way through the Gill before finding the water too deep to go on. At this point the sides were vertical rock, so I retraced a few steps until I came to a steep bank, which I scaled without great difficulty. About 20 feet above the water I came upon five plants of what my memory of an illustration told me were *Polystichum Lonchitis*. I will retrain from communicating to my readers the excitement I felt for the next few hours at such a rare find, for when at last I could compare a frond with a diagram

I had at the hotel, I realised, alas, that I was mistaken. But, if my excitement was rudely chilled, my curiosity remains mildly aroused. The Holly Fern has several times been reported from Linn Gill, yet I have no doubt incorrectly. The site is wholly unsuitable for it. The plants I saw were undoubtedly *P. aculeatum*, and probably immature, since they had no sori. Other people also have certainly mistaken such plants for *P. Lonchitis*, but do they grow up? I saw no mature plants within miles. At any rate, I hope to return next year for a longer search and dispel what is probably no mystery.

The eleven species of fern so far mentioned as seen are what may be called the commoner lowland ferns of the area. To them must be added four others. The first of these is the Hard Fern, *Blechnum spicant*, very fine specimens of which may be seen on some sloping banks. It must also be counted a highland fern there, too, but over 1,000 feet it is much smaller, the fronds being only two to three inches long when the site is exposed, instead of nearly two feet long in favoured spots lower down. Much more difficult to find is the Adder's Tongue, *Ophioglossum vulgatum*. Mr. C. A. Cheetham, the renowned Yorkshire naturalist, first introduced me to some in a field near Settle, and I later found some outstanding specimens on a road verge near Kendal. Here I should record the debt I owe Mr. Cheetham for his indispensable guidance, either in person or by word, to the sites where several rare species grow. In the time at my disposal I should not have found them without his help.

The next fern I include in the lowland category is the Beech Fern, *Thelypteris Phegopteris*. A fine clump was growing above a stream near Ingleton, and nearby a patch of Wilson's Filmy Fern, *Hymenophyllum peltatum*, mingled with moss on a rock face. Later I was to find it flourishing much more freely elsewhere.

Two other ferns that may be mentioned here, since they dwell at lower rather than the highest altitudes, are the Oak Fern, *Gymnocarpium Dryopteris*, and the Moonwort, *Botrychium lunaria*. I found only one clump of Oak Fern—in a scree at an altitude of about 1,100 feet. The only other ferns occupying the scree were one clump of Beech Fern, a few *Cystopteris fragilis*, and about a dozen plants of *D. Borreri*—an odd assortment. The growth there of these ferns would indicate that it was not a limestone scree, but unfortunately I was in a hurry and forgot to note that. The Oak Fern is said to be much rarer now than it used to be.

My only disappointment in the week was over the Moonwort, for I saw no good specimens, but only some stunted or damaged ones.

Now to a quite different association of ferns: a visit to a valley not far off was a rewarding experience. It is flanked by tremendous scree about 500 feet high, and these are dotted all over—in places almost held together, so appearances would suggest—by thousands of large clumps of the Parsley Fern, *Cryptogramme crispa*. Their luxuriance and profusion create an arresting spectacle. Leaving them and advancing up a stream, I found the Mountain Fern in plenty, *Thelypteris Oreopteris*, one of my favourites. There may be nothing uncommon about its distribution, but there is about its qualities. The elliptical outline of its fronds is exceptionally pleasing, and this, together with their firm texture, golden green colour, slight tackiness when passed through the hands, delicious scent when pressed to the face, combine to give a rare distinction, a singular liveliness, to this lover of the mountain air. Its clumps grew freely on the firm ground between the scree and the torrent that swept down here. Walking up the banks or bed of the stream as necessity dictated, I came upon a large and flourishing colony of Wilson's Filmy Fern. Almost unsullied by any mixture with moss, it covered several square feet of rock. Incidentally, in contradistinction to what is sometimes said to be the preference of the filmy ferns, neither this colony nor the one at Ingleton was within the ambit of spray from the river. But in both places the river was torrential, and thus may well have increased the humidity of the air to a high enough level for the survival of these filmies.

Finally, an altogether different group of ferns is to be found in the high limestone pavement and adjoining scree. Where rocks have tumbled down from certain limestone cliffs, or scars as they are called there, the Rigid Buckler Fern, *Dryopteris Villarsii*, grows among them in some profusion. Its blue-green fronds issue from every chink in the fallen limestone, fluttering ceaselessly in the wind that never seems to be less than a breeze there. Its distribution in Britain is extraordinarily restricted, for it is found only at this locality and at several similar ones in Lancashire and North Wales.

Two other ferns abundant on the high plateau are the Green Spleenwort, *Asplenium viride*, and the Limestone Polypody, *Gymnocarpium Robertianum*. It is in the grikes that the latter grows best, spreading freely through them, its fronds just level with the surface.

But what makes these parts a special place of pilgrimage to the fern lover is the presence of the Holly Fern, *Polystichum Lonchitis*. It is exceedingly rare even in that fastness, but the few plants there looked surprisingly healthy. The frontispiece shows one of them. Several were fairly young—one quite a baby—and nearly all had plenty of new

growth. With their stiff dark fronds pressed against the pale limestone, they seemed to my fancy to be imbued with a special fixity of purpose, tenacious, archaic, remote, only giving a slight rustle occasionally as a gust of wind penetrated the grike and swept through the leather pinnae. Most were sufficiently deep in their fissures to be in perpetual shade, and the soil they grow in is kept moist by the frequent rain and mist. The Green Spleenwort and the Hartstongue are their companions. May they remain undisturbed.

DOUGLAS SWINSCOW.

SOUTHPORT, 1953

As the Hon. Secretary was unable to attend this year, Mr. Bolton very kindly made the report which follows. Since he is one of the Judges, his opinion carries great weight, and we are glad to present it as given.

We only add sincere thanks for willing help given at the Bureau in the National Societies' Tent, to Mr. and Mrs. C. W. Grubb, Mr. B. Hayhurst, Mr. T. H. Bolton, Mr. Brunt, Mr. Isaacs, Mr. Jackson and Mr. Wainwright.

A number of plants, and some pans showing Fern growth from prothalli onwards, prepared by Mr. Grubb, were given by Members for exhibit at the Bureau.

These were sold at the close of the Show and added nearly £10 to our funds.

Many people showed great interest in this display, and we are hoping to obtain several new Members.

SOUTHPORT FLOWER SHOW

We are pleased to know that this world-famous Show was better than ever, and the record crowds proved again that horticulture in this country is more popular than ever.

The fern tent was very similar to previous years, Messrs. Brookfield winning Class 9, for a group of hardy ferns. It is rather a pity that more space could not be allowed so that the ferns were not so crushed, and the plants could be seen individually. Many good specimens were hidden. Mr. John Brookfield came second, he had three good plants of *Pulcherrimum bevis*.

CLASS 10. Six Hardy British Ferns.

Mr. John Brookfield again won first prize with some very good plants of young *Clarissima* looking very grand, also *Pulcherrimum bevis*, indeed a good plant. Mr. C. H. Rainford gained second prize and Mr. Hayhurst third, having a nice plant of *Athyrium capitatum*.

CLASS II. Three Scolopendriums. Distinct Varieties.

Mr. Hayhurst gained first prize in this Class, having a fine plant of *Ramo-Cristatum*. This Class was not good and I think should be more popular.

CLASS 12. Three Polypodiums. Distinct Varieties.

Mr. John Brookfield gained another first, having a good plant of *Pulcherrimum*. Mr. Hayhurst gained second with three exceptionally nice pans, Clapham being very good. Mr. W. Law came third with a good pot of *Cambricum*.

CLASS 13. Three Polystichums. Distinct Varieties.

Mr. J. Brookfield first, Mr. Hayhurst second, having a plant of *Gracillimum Cristatum* which I thought one of the best plants in the Show.

CLASS 14. Three Athyriums. District Varieties.

Mr. Hayhurst first, with a fine lot of very nice plants of *Clarissima* which I feel sure we shall see in much better form next year. Mr. W. Law was second with three very good plants including an outstanding plant of *Filix plumosum druery*. Mr. J. Pye was third.

CLASS 15. Three Lastreas. Distinct Varieties.

Mr. Hayhurst first, Mr. Brookfield second. A very poor class, could be very much improved.

CLASS 16. Three Hardy British Ferns. Distinct Varieties.

Mr. Brookfield first, Mr. Rainford second, Mr. Hayhurst third. This Class I did not consider too good.

CLASS 17. Three Hardy British Ferns. Three distinct normal species.

A Class which I do not consider worth while having in the Schedule.

CLASS 18. One British Fern.

Mrs. Basnett came first with a very fine *Scolopendrium crispum*, I considered this the best plant in the show. Mr. Law came second with *Filix femina plumosum Druery* very well grown, and Mr. Brookfield third.

T. H. BOLTON.

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are:—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually once a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary,

Revd. E. A. ELLIOT,

South Stoke Vicarage,

Near Reading.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to:

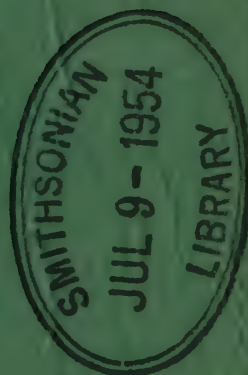
THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
VINCENT SQUARE, LONDON, S.W.1

VOL. VIII

No. 4

- The -
**British Fern
Gazette**

1954



EDITED BY

Rev. E. A. ELLIOT, M.A.

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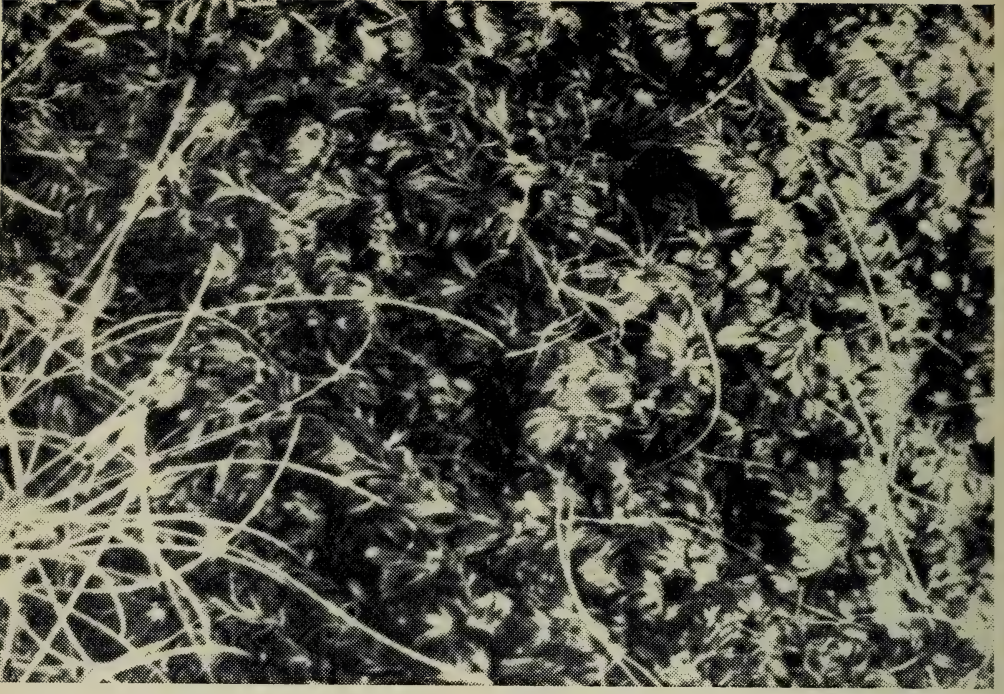
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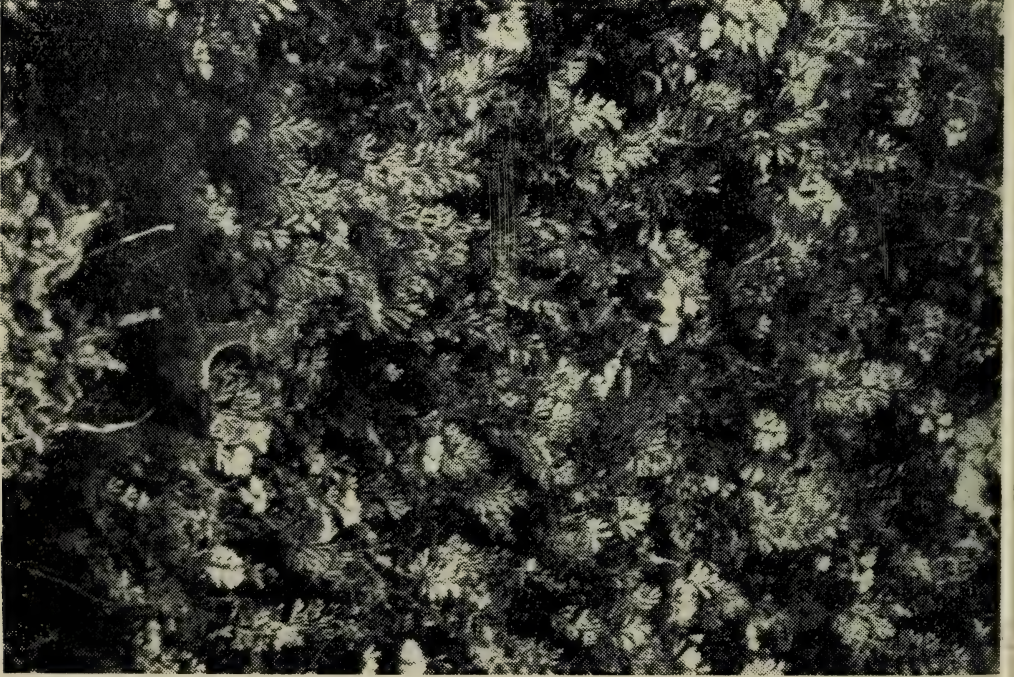
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Loughton, Essex.*



Hymenophyllum peltatum



Hymenophyllum tunbridgense

THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII.

1954

No. 4

CONTENTS

	Page
EDITORIAL NOTES	81
BALANCE SHEET	83
FRONTISPIECE: The Hymenophyllums	84
OBITUARY	84
SOME DARTMOOR SUMMITS: Dr. Swinscow	85
BOTTLED FERNS: Mr. G. Barltrop	87
VARIATION: Mr. P. Greenfield	89
FERN HUNTING IN WEST COUNTRY: Mr. J. W. Dyce	91
SUBSPECIFIC GROUPS OF POLYPODIUM: Dr. Swinscow	93
LASTREA DILATATA AND ITS ALLIES: the late Dr. F. W. Stansfield	95
THE OAK AND BEECH FERNS: Revd. E. A. Elliot	100
POLYSTICHUM ACULEATUM PULCHERRIMUM, BEVIS: Mr. P. Greenfield	103

EDITORIAL NOTES

The date for what must be an informal gathering of Members at the R.H.S. Gardens at Wisley, has been fixed as Saturday, July 17th. At the time of writing, in April, it is hoped that our Member, Mr. H. G. Rugg, on his visit from the U.S.A., will be able to be there.

Your Secretary also plans a visit that day. Members coming from or via London will find the Green Line Buses (for Guildford) a very convenient way of transport. The Conductor will put visitors down, at a provisional stop, about five minutes' walk from the Gardens.

The Excursion to the Lake District has been arranged from Saturday, September 4th, till the 11th. Several of our Members have applied to join this: if there are others who may wish to do so, the Hon. Secretary will be glad to send particulars of some Hotel accommodation. He cannot, however, arrange for this accommodation, which must be left to any such Members themselves.

As the Gazette will be in the Printers' hands when the Annual General Meeting is held, a Report of Proceedings cannot now be given, but will be included in the half-yearly letter next Autumn.

Our Hon. Treasurer, however, has drawn up an interim Balance Sheet, which we are glad to present.

In August, 1953, our Member, Sir G. C. F. Ramsden, who began collecting with enthusiasm from the time he joined us, had a notable slice of "beginner's luck" in the discovery of a very fine *Polystichum setiferum* (*angulare*) *divisilobum*. The plant, thought to be only two or three years old, was growing wedged in among roots of a big tree on the bank of a shady almost disused lane on the Hants-Surrey border: and was taken into cultivation.

Its growth and appearance this year is awaited with special interest, as it is considered to be the best find of this type found for very many years.

There were no other *Polystichums* near by, the nearest colony being a small one about half a mile away, consisting of normal species.

We congratulate Sir Geoffrey on his good fortune, which we believe will be crowned with success in cultivation.

The reprint in this issue of an article by the late Dr. F. W. Stansfield from Vol. 3 No. 29 (1916), is much longer than usual: but the article was so thorough that to give extracts only would spoil the sequence of thought.

Probably some of the plants dealt with are not existent now: but these or similar forms may occur again, and in any case the account of them should stimulate watchfulness for any "off-type" specimens in these species.

By a happy coincidence, after the subject was chosen for reprinting, a Conference on "The Concept of Species," was held on April 9th and 10th this year by the Botanical Society of the British Isles. One of the papers read was on the *Dryopteris* complex in Europe, and our familiar *spinulosa* and *dilatata* and less-well-known *cristata*; and contained a mass of information, some of it very new and almost revolutionary.

Ferns in general were to the fore in the Conference papers, British species being described in considerable numbers and much information being given, equally new and sometimes of a surprising nature.

It is hoped that it may be possible to draw on some of this for a future issue of our "Gazette."

New Members who have joined since our last publication are:—

L. Fawley Judge, Esq., Nordham, North Cave,
East Yorkshire.

Professor R. E. G. Pichi-Sermolli, Istituto Botanico, Via
Lamarmora, N.4, Florence, Italy.

Two distinguished Botanists have honoured us by accepting Honorary Membership:—

Professor I. Manton, B.A., Ph.D., Department of Botany, The University, Leeds.

Dr. E. F. Warburg, M.A., Ph.D., South Hayes, Yarnells Hill, Oxford.

As stated in the half-yearly letter, we are allotted a Bureau, in the National Societies' Tent, at Southport Show, August 25th to 27th.

Members attending who can give potted ferns, to be displayed at the Bureau and sold at the end of the Show for our funds, will be helping the Society in two ways: by showing what we grow and are interested in; and financially.

The plants need not be large, and in any case can be taken out of pot and simply wrapped for purchaser's convenience.

All that is required from any who can help is to take the ferns to the Tent and hand them to the Member in charge.

Members can also help greatly by taking a spell of attendance at the Bureau, to give information.

Mr. B. Hayhurst is again kindly supervising arrangements.

INTERIM FINANCIAL STATEMENT TO 30th April, 1954.

1953	£	s.	d.		£	s.	d.
June 30th							
To Balance	48	6	3	" Gazette"	23	15	6
Subscriptions	38	0	0	Block of "Gazette" ..	1	1	5
Donations	1	11	0	Printing Half-yearly			
T.D.V. Swinscow —				Letters	1	5	0
Cost of block for				Subscription R.H.S. ..	2	2	0
1953 "Gazette" ..	1	1	5	Balance	70	11	3
Sale of Plants at							
Southport	9	16	6				
	£98	15	2		£98	15	2
1954							
April 30th							
To Balance	70	11	3				

The Treasurer reports that the financial position is good and wishes to record our thanks to the members who helped to achieve this happy state of affairs by their efforts at Southport Show on behalf of the Society. He has, however, to draw attention to the fact that *far too many subscriptions are still in arrears, and would like to see this remedied at an early date.* **Another subscription becomes due on 1st July. Please make a note to remit this early, together with amounts overdue, to the Hon. Treasurer.**

FRONTISPIECE

The photographs shown are the work of Dr. D. Swinscow, and show clearly the difference, in appearance, between *Hymenophyllum tunbrigense* on the left and *H. peltatum* (*unilaterale*, *Wilsoni*) to the right.

The difficulty in photographing these ferns, due to their small size and the poor light in which they usually grow, has, one feels, been very successfully overcome. Reference to both will be found in the article "Some Dartmoor Summits" in this issue; and to *peltatum* in Vol. VIII, No. 3, pages 74, 75.

OBITUARY

It is with the deepest regret that we record the death, on April 8th last, of Mr. C. W. Grubb, after an operation.

He became a Member of our Society in 1934 and was then engaged in business as a Nurseryman at Bolton-le-Sands: it was in that year that he first exhibited Ferns at Southport Show, winning third place in the Group Class.

In 1935 he took the first prize in this class and several other prizes as well: and continued these successes with varying fortune in them until his retirement from business.

During these years he was constantly in demand as a Judge at the important Northern Shows; where his skill, and very clear idea of what a prize-winning exhibit should be, won general acceptance as being both fair and correct.

After retiring, he became one of the Judges at Southport Show and dealt there, amongst other classes, with the Ferns: and gave invaluable help with the Bureau recently allotted to our Society, of which he had been a Committee Member for many years.

Most of his favourite ferns went with him on his move to Lancaster, and many of our Society owe some of their best plants to his generosity: the writer among them.

But our particular recollection of him will remain that of a large-hearted friend, with a homely wisdom and outlook on life quietly expressed, and all the more impressive and inspiring by its simple sincerity.

E.A.E.

MATTHEW D. MANN, Jr.

We regret also to record the death of a Member who was only known to us through correspondence, but who had shown great interest in our Society since he joined it in 1951.

He was born in 1884, and eventually became first operational head of the Bayway Refinery, Standard Oil Company of New Jersey.

In 1948 he was elected Treasurer of the American Fern Society, which he had joined in 1940: their current journal has a notice of him by Dr. R. C. Benedict (President), which says:—"He was devoted to the work of the Society, and gave of his time far beyond the bare essentials of the office of Treasurer."

By exchange of spores with him, some interesting American ferns are being raised and will be distributed: we are indeed sorry that this pleasant intercommunication has now ended.

SOME DARTMOOR SUMMITS

On the western edge of Dartmoor stand three tors of special interest to pteridologists. The furthest west of them is Cox Tor, 1,452 ft. From its summit, the eye can scan a great arc with a radius of perhaps 50 miles westwards into Cornwall or southwards beyond Plymouth out to sea. About 1,500 yards behind Cox Tor, that is to the east and slightly south of it, stands Staple Tor at 1,482 ft. Again behind it about 2,000 yards, and slightly to the north, Great Mis Tor rises to 1,761 ft. A famous rock basin called Mistor Pan is hollowed in one of its topmost granite blocks. (The name erroneously designates an area half a mile away on Ordnance Survey one-inch maps.) About a yard across and six inches deep, this beautifully symmetrical and clean-cut basin is mentioned in a document dated 1291, owing its record there to its value as a boundary mark on the edge of the Forest, albeit one that is invisible from the ground and needs some agility to find. For our purpose it serves to draw attention to the rain, frost, and wind that scour the rocks here and are a striking feature of the climate on the summits. These elements are even now imperceptibly slowly cutting this memorial to their ceaseless battle with the granite, though our present rather mild climate has given the rock an advantage that lay rather with the weather in the Ice Ages.

The wind blows continually over these tors, usually from the west or south-west. The average annual rainfall is about 60-70 inches. In winter they are subjected to snow and frost for several and perhaps many weeks, while in summer they are fully exposed to the sun. They are thus exceedingly bleak and windswept, and the granite outcrops are gradually being enlarged by the elements' wearing away the peat soil. I should perhaps add that the word tor designates the whole hill; its meaning is not restricted to the outcrop of granite that typically crowns the tors on Dartmoor. Surmounted by their enormous blocks of granite, and exposed to such vigorous weather, the summits of the tors can support only a sparse

vegetation. Yet a notable feature of it, and one whose abundance came as a surprise to me, is Wilson's Filmy Fern (*Hymenophyllum peltatum*).

Finding such a delicate plant growing so freely in this dour locality led me to observe its precise habitats more carefully, and thence to an interesting demonstration of how the climate in miniature at a given place can differ vastly from the climate at large there. The top of Great Mis Tor consists of a hump of peaty soil overlying granite from which enormous blocks of bare granite rise twenty to thirty feet in the air. Around them are many lesser blocks and boulders strewn haphazard, the large and small blocks extending a little way down the sides of the hump. It is here that the Filmy Fern grows fairly plentifully in the crevices, sometimes on apparently bare granite, sometimes on thin peaty soil, always on a slope, usually unmixed with moss. The places where it grows are chiefly restricted to a certain level in relation to the surrounding peat and rock—namely, below the top of the peat hump, but well above the lowest line of the junction between it and the granite crown. Almost invariably a slight ooze of water—not so much as a trickle—seeps down one of the rocks composing the crevice in which the fern grows, keeping the soil moist and the air humid. This water can only come from the surrounding peat; and, since rain falls too inconstantly for the needs of these ferns, the explanation of why their sites are restricted to a certain level becomes clear. They must be just far enough below the summit to have water perpetually discharged near them by the natural sponge of the peat, yet not so far down—only a few feet more—that they are overwhelmed by the competition of tough grasses. That the direct fall of rain of these ferns is not enough for their needs is evident in two ways: first, I noticed a few patches exposed to the sky but without other moisture, and life is evidently hard for them; secondly, some of the best patches were in crevices entirely roofed in by slabs of granite. All the crevices occupied by Filmy Fern face north and give the sun no access; most of them are closed in on every side except the north, and often on top too. Filmy Ferns in crevices that did not fulfil all these conditions were feeble and dessicated specimens, and the odd colony or two above the level of the peat sponge seemed to be leading a precarious existence. These fastidious ferns therefore flourish here because they find small sites where the micro-climate exactly suits their needs, and immediately beyond the bounds of those sites they are protected from severe competition by an unusually harsh general climate.

Exactly the same kind of habitats with their patches of Filmy Fern are to be found on the summit of Staple Tor, but

Cox Tor presents a rather different spectacle. It was evidently once crowned with an enormous pile of granite blocks, far greater than those now exposed on its neighbours, but as the soil was driven away the pile seems to have become unstable at some time, no doubt many thousands of years ago. At any rate it collapsed, and an extensive heap of boulders is now strewn over the peat hump. The result is that there are few sites where the Filmy Fern may grow, and I found only one patch. But the pile of stone in tumbling down has formed several screes, and in these are to be seen some flourishing plants of the Beech Fern (*Thelypteris Phegopteris*).

In the same parts of these tors other and commoner ferns also grow, but only odd plants here and there. They include *Blechnum spicant*, *Dryopteris Borreri*, *D. dilatata*, *Polypodium vulgare*, and *Pteridium aquilinum*. The Bracken plants, elsewhere too often rather a pest, here have a special interest in that their individual isolation proclaims them to be what the late Professor F. O. Bower remarked on as rather rare—namely, natural sporelings.

Because of its clean lines I have a special liking for that fern ally, the Fir Clubmoss (*Lycopodium Selago*). It also grows hereabouts, though sparsely and in much seclusion, occupying an occasional crevice of the kind chosen by the Filmy Fern.

I searched carefully for *Hymenophyllum tunbrigense*, said to be the commoner Filmy Fern in Devon, but found none on these summits. If the reports of its having been found there are correct and not the result of misidentification, I suspect it does not survive the hazards of the place for long. It may be seen in the Dartmoor valleys not far away, but they are another world.

DOUGLAS SWINSCOW.

BOTTLED FERNS

Our Member, Mr. G. Barltrop, of Nelson, New Zealand, has sent an interesting account of a Fern's growth in, to be exact, a screw-top jar.

The original plant in this was one of their "Umbrella Mosses," given by a boy in or about 1941, after a meeting of their Horticultural Show.

There was then about an egg-cup-full of water in the jar. After examining this to ensure it was air-tight, Mr. Barltrop put it under a hedge, in shade, where it remained for two or three years.

It was then seen that a fern, *Pellaea rotundifolia*, had appeared; small, but healthy looking. The moss was also alive, but less robust, than at first. At the end of 1953 the fern's roots were right round the glass, and new fronds were visible.

The jar has never been opened since it was given, and is still air-tight. It is difficult to account for the fern's survival and growth, but a similar occurrence was recorded by the late C. T. Druery, Gazette Vol. 2, page 264, from which an extract is appended. It refers primarily to an experiment with the base of a Hart's tongue fern; these bases can produce bulbils under certain treatment.

"I placed a small base about one-third of an inch long, which had developed a bud, in a glass pickle jar, closed by a glass stopper provided with a tightly-fitting rubber ring, the rim of the stopper also resting on the rim of the jar. The jar being thoroughly cleansed, some coarse silver sand, thoroughly washed and freed from all organic matter, was placed in the bottom of the jar to about an inch in depth; the surplus water was drawn off by means of blotting paper, so that the sand was simply saturated but not flooded. The base bearing the bud with one minute frond was then dropped on to the centre of the sand, bud uppermost; the stopper was inserted tightly and wired over to prevent removal.

"From that time the Hart's tongue has grown healthily its fronds reaching the stopper and partly filling the jar. In addition two seedling *Lastreas* have made their appearance, probably from stray spores adherent originally to the base.

"A dense mass of confervoid growth accompanies the Ferns, and recently a small worm was noticed on the glass inside. As water from the main was used, and confervae spores were probably on the base itself, the presence of other vegetation than the Fern intentionally introduced is easily accounted for. The problem, however, is, Whence has all the material been derived for so much vegetative growth, considering that originally only a very small piece of the base of a Hart's tongue frond was introduced, that the sand (quartz) was thoroughly washed, and that the bottle being hermetically sealed, no fresh supply of carbonic acid gas was available for structural purposes?"

The article continues with a detailed consideration of the carbonic acid gas question: but it is evident that no conclusive opinion was reached at that time, and the matter remains very much the problem it was nearly 40 years ago; by which time, only one Fern, a *Lastrea*, survived.

VARIATION

The fundamental interest of this Society and of its forerunner, the British Pteridological Society founded about 1875, has been the collection of wild varieties of ferns, their cultivation, and the raising from them of further varieties.

This is mainly a horticultural interest of course, but the work of the Society has not been without scientific value. Apospory was discovered by C. T. Druery in a variety—*Athyrium* f.f. (*plumosum*) *clarissima*. Woolaston and Druery observed production of prothalli on *Polystichum angulare pulcherrimum* and varieties of other species. Varietal forms were supplied to W. H. Lang for his experiments in induced apogamy and to other scientific investigators.

But while there have been extensive investigations into peculiarities of propagation and more lately into parentage and hybridization for which the counting of chromosomes is a powerful weapon, not much research appears to have been done for the purpose of discovering the cause of variation and the methods by which the fern plant carries it out. Presumably there is dislocation of the sub-microscopic hereditary factors. The precise nature of such factors is beyond the scope of botanical investigation; but there appears to be still some scope for further investigation by simple methods.

In a recent article it was described how a damaged plant of the variety known as *Polystichum angulare plumosum grande*, Moly, produced a new frond resembling normal *P. aculeatum*. This effort to carry out repairs is suggestive of the action of growth-hormones. That is not particularly remarkable; but what is remarkable is that the repairs were carried out to a different pattern. Now, hereditary factors have been said to direct the growth of a plant; but here we seem to have hormones exercising the mastery over hereditary factors to the extent of depriving them of their ability to keep the fern off the normal—for the time being. The behaviour of the fern, although a particularly interesting case, is not unique: somewhat similar cases of alteration of form have been known to occur.

Although in the above instances the difference in form was temporary, it may be that such a change could become permanent and perhaps accentuated in the course of time. Take a look at the grandiceps or acrocladon type of variation. The lower part of the leafy portion of the frond may consist of little more than the rachis while at the top there is an outbreak of dense growth. To some extent this applies to cristate forms. Vigorous plants of these types suffer no apparent loss of fertility.

On the other hand, in the more extreme type of *Polystichum angulare acutilobum* the pinnules of the frond become mere shreds and the stipes and rachis are much enlarged. The concentration of energy in the stipes and rachis is perhaps the cause of the large number of bulbils often produced on this type, e.g. Moore's and Wollaston's *P.a. (acutilobum) proliferum*. As against these types of apparently excessive energy, there is the type very loosely described as plumose. In such cases there is a thinning of the texture of the pinnules, whether divided or not, and usually an increase in area. The corresponding variation in *Scolopendrium* is a thinning and expansion of the margins, causing the crispum and fimbriatum forms. And at the same time there is a complete or almost complete loss of fertility. The characteristics of plumosity can perhaps be held to be evident in the pulcherrimum type of *Polystichum angulare* and in some other ferns where the pinnules develop or can be induced to develop fine prothallial extensions.

As bearing on the suggestion that resistance to growth may cause variation it should be mentioned that in general, varieties of ferns are less often found in flourishing colonies than where a plant is encountering adverse conditions. For instance, scolopendriums can be found growing up to perhaps a yard in length in thousands along the Landslip west of Lyme Regis, with no appreciable variation, while startling varieties can often be found as tiny plants growing in mortared walls on bridges and elsewhere from which they cannot be extracted without damage to the masonry.

A description of all forms of variation is not of course possible within the limits of a number of the "Gazette"—there is a mass of information on the subject in earlier publications of the Society; but probably enough has been said to direct attention to variation as indicative of some complications in the study of ferns which may have to be unravelled as part of the problem of their evolution.

NOTE.—*Polystichum aculeatum* has the chromosome number 164; *P. angulare* 82; and this difference was once held to be evidence that the ferns were different species. Cytologists would probably not now necessarily take that view; and in the article on "Intermediate Forms and Evolution" in the "Gazette" for 1952 the difference in chromosome numbers was deliberately ignored in view of the strength of the morphological evidence.

Polystichum angulare plumosum grande, Moly, is probably derived from a form intermediate between *angulare* and *aculeatum*; although it would, by most people, be considered to be nearer to *angulare* than to *aculeatum*, that has not yet been determined cytologically. But in any case there

may be some significance in the fact that the energy developed in the repairs associated itself with that form in the *aculeatum-angulare* complex which has the highest chromosome number. That there is some relation between the activity of hormones and the increase in chromosome numbers which a plant can develop seems to be borne out by morphological changes accompanying additional chromosomes, these changes being usually in the direction of increase of size and apparent vigour, leading sometimes to coarseness and perhaps roguishness.

Probably some such theory has been advanced before, but in any case criticism of it would be sincerely welcomed.

P. GREENFIELD.

FERN HUNTING IN THE WEST COUNTRY

In September, 1953, Mr. P. Greenfield and I were again in the West Country fern hunting. We had hoped to have some other members of the Society with us, but for various reasons they had to drop out, and only the two of us booked in at the George Hotel, Chard, on Saturday, the 12th September, with pleasant thoughts of a good week's hunting before us. Unfortunately several days were wet, but the rain did not curtail our activities and we covered a large area, mostly to the south and west of Chard.

Our first find, during a short walk in Chard before dinner on the day of our arrival, was an interesting specimen of *Scolopendrium marginatum*, a tiny plant with soriferous fronds under two inches long, growing in a wall from which it was with great difficulty removed, leaving practically all its roots behind. However, I am pleased to add that, planted in a small pot and kept in humid conditions, it settled down right away, and immediately began to unroll new fronds. It has now developed a good root system, and it will be interesting to see how this plant shapes in its changed circumstances.

Most of the week was spent in the country lying between Chard and Axminster, and intensive map study and planning in the evenings, enabled us to proceed purposely each day, and cover the ground comprehensively. We gave particular attention to promising areas noted, but not hunted over owing to lack of time, during our visit the previous year. Ferns abound in this district, chiefly *Polystichum angulare*, and I still recall with pleasure one lane, a cart-track, running downhill for a mile between high hedges which met overhead. In the dim tunnel the only undergrowth was *P. angulare*, draping the banks on either side. Minor variation was there, and I scrutinised closely the whole of

that vast collection of plants hoping for something good, but in vain. *P. aculeatum* was not uncommon, and in some shaded places was exceptionally vigorous with large handsome fronds. Many plants were again seen which appeared to be intermediates between *aculeatum* and *angulare*, with characters belonging to both the species well defined. *Scolopendrium vulgare* bifid and multified varieties were frequent finds, but none were worth digging up. *Polypodium vulgare* also offered us nothing good in spite of its abundance and the frequency of minor variations, such as crenate, serrate, and bifid pinnules. Another common fern was *Asplenium trichomanes* which draped walls and banks with its graceful fronds, but persisted in presenting a normal appearance.

Our leisurely explorations along the lanes, poking into the ditches, scrambling up the banks, and getting tangled in the wet hedges, did not go unobserved, and a lively interest in our activities led to many talks with farmers and hedge-cutters. The latter were out in force, a result of the weather it was explained to us. Hedge-cutting is a wet weather job on the farms, but our experiences in wet hedges did not incline us to regard it as a pleasant one. It was a rude shock to discover that even this occupation has now been mechanised, and we watched a tractor speeding along a lane, the cutting machine behind it doing the job all too thoroughly and efficiently. We surveyed the ferny trail of destruction in dismayed silence, our thoughts on the possible good things which were being ruthlessly snatched from our grasp.

The interest in our hunting prompted offers of help—one farmer gave us the freedom of his farm—and we received much information, helpful and otherwise, which directed our footsteps into pleasant byways. We were told that the Royal Fern grew along the banks of a stream near Hawkchurch. Patient searching revealed no Royals, but we did find *Athyrium filix-foemina*, growing as I have seldom seen it, in massive clumps, the magnificent fronds five feet long and broad in proportion, overhanging the water. It seemed obvious that these were the "royal ferns," and royal they certainly were, of such size that the wrong identification by anyone not versed in ferns was excusable. Other information led us to the home of the late Dr. Wills, one of the pioneers of the fern cult, and the distributor of *Polystichum aculeatum pulcherrimum* Bevis, a short history of which appears in this issue. We discussed the possibility of mementoes of the Doctor in the shape of variation in the surrounding lanes, due to wind-blown spores from his collection, but found nothing apart from a rather foliose *angulare*, which, however,

was no better nor worse than many others discovered in the area.

It was a pleasure to revisit the colony of *Lastraea aemula* discovered by our Editor, and to admire once more these lovely ferns. Again we were able to extend the limits of the station, and were glad to see the fern so firmly established. *L. dilatata* flourishes in the same place, and the odd plant can be found which to the uninitiated eye, suggests a closer affinity to *aemula* than actually exists.

To the west of Chard lies Howley, where in 1914 a fine *P. angulare acutilobe* was found by Dr. F. W. Stansfield. As there are no records of more recent date from this district, we decided that some time spent there might be worth while. Two days were allotted, and we were interested to note that in the environs of Howley, and in the country lying immediately to the south, there is a tendency in both *P. angulare* and *aculeatum* to produce acute pinnules. No plants were found to approach Dr. Stansfield's find, but some of sufficient interest to warrant removal were brought home with us in the hope that spore sowings will produce some good varieties.

We did not bring back many plants. Some have already been mentioned, and two more deserve attention. One was a fine specimen of *P. angulare tripinnatum* with large handsome fronds, the numerous scales clothing the stipes giving the plant an unusually striking appearance by reason of their conspicuous dark centre stripes. The other, found at the very end of our last day on a dry exposed bank, was also a *P. angulare*, all the pinnae having small cristulate and twisted tips. The plant was a small one of three crowns, with the variation thorough in all of the fronds. Dr. F. W. Stansfield reported the finding of a similar variety during the Totnes excursion in 1913, but there are no records of its subsequent development. Our plant, while not a first-rate find, made a happy ending to our week, its promise of good things still awaiting discovery, sending us home encouraged to plan more visits to the West Country.

J. W. DYCE.

SUBSPECIFIC GROUPS OF POLYPODIUM

The genus *Polypodium vulgare* is more complicated than it seems at first sight. Professor Manton describes three distinct cytological types in her book on the evolution of the pteridophyta.¹ These are the diploid, with two sets of chromosomes, the tetraploid with four, and the hexaploid with

¹ *Problems of Cytology and Evolution in the Pteridophyta*. Cambridge. 1950.

six. Triploid and pentaploid plants have also been found, but they are rare hybrids of the three main types and probably do not form large populations of plants. Other features besides the number of chromosome sets distinguish the three main *P. vulgare* types. The shape of the fronds is one of them. The diploid ferns have rather broadly oval fronds, the tetraploid long and narrow, the hexaploid intermediate. The shape of the sori varies too. They are oval in the diploids and hexaploids, round in the tetraploids. Again, a characteristic of the diploids is that the lowest pinnæ project forward like those of the Beech Fern. This projection may sometimes be observed too in the hexaploids. But to those who find inspiration in the axiom, "Science is measurement," the sporangia offer the most attractive morphological, as distinct from cytological, feature distinguishing the three types of Polypody. For a count of the indurated cells in the annulus will at once disclose the cytological group into which the fern in question should be placed.

Under the microscope the sporangium appears as a somewhat flattened sphere containing the spores. Round much of its vertical circumference is a ring of cells, the annulus, quite distinct from those making up the wall of the sporangium. In this ring are a number of indurated cells, and they appear darker than the others. The interesting observation has been made—most elaborately by Professor Manton—that the diploid *P. vulgare* has five of these cells, the tetraploid has twelve, and the hexaploid has nine. These are average figures, but the range round them is very small, and those rather few sporangia that do not have the average number rarely depart from it by more than one above or below.

A comparison of the features, most of which are outlined above, that distinguish the three cytological types of *P. vulgare* shows that the hexaploid is intermediate between the diploid and tetraploid. A natural inference, therefore, is that it is probably derived from a triploid hybrid followed by doubling of the number of chromosomes. The hybrid would contain one set of chromosomes from the diploid and two from the tetraploid.

With these facts in mind I recently examined the sporangia of my own very small collection of horticultural varieties of *P. vulgare*. And I was delighted to be rewarded with the discovery that all three main cytological types seem to be represented.

A specimen of var. *serratum* that I have shows the expected number of five indurated cells in the annulus. It also has forward-projecting lower pinnæ, rather broad fronds, and oval sori. In all respects it seems to be identical with the var. *serratum* described by Professor Manton and others. It

was, however, sold to me as "omnilacerum," to which it bears hardly any resemblance.

My *P. vulgare cornubiense* proves to have twelve indurated cells in the annulus, round sori, and its lower pinnæ not pointing forward. It thus appears to be a tetraploid. But again, I cannot find it in me to agree that it was sold under its correct name. The var. *cornubiense* is put by Lowe² into the plumose section, but he, and Druery³ too, say that it characteristically produced normal and half-normal fronds as well as plumose ones. My plant is not so finely cut as they describe, and it does not produce normal fronds, being bipinnate, tripinnatifid.

The third cytological type is shown by *P. vulgare pulcherrimum*. This has nine indurated cells and its lower pinnæ projecting forward. The sori are now round rather than oval, but this discrepancy from the expected shape is to be accounted for by their age, since the contour tends to change as they get older. The name of this specimen at least seems to be beyond reproach. My var. *cornubiense* rather resembles it, and the two could most aptly be described as tetraploid and hexaploid *pulcherrimum*. Another of my polypodies with nine indurated cells is one correctly named *multifidum*; its pinnæ are all bifid at the tips. Most of its rather few sori are oval.

Some of my other polypodies do not at present bear sufficiently mature sporangia to show the indurated cells. I hope to examine them later, and in due season also the chromosomes in the spore mother cells so as to check these observations. Meanwhile, if any members would like to send me fronds bearing ripe sporangia, I should be grateful for the opportunity of examining them to see which cytological type they may be expected to belong to. I should particularly like fronds from named varieties that are not variable and are thoroughly distinct in appearance. Only a few sori are actually needed for the examination; five to ten should be ample.

DOUGLAS SWINSCOW.

LASTREA DILATATA AND ITS ALLIES

(Reprinted from Vol. 3, No. 29. September, 1916)

This fern, which is part of the *Polypodium cristatum* of Linnaeus, the *Polypodium dilatatum* of Hoffmann, the *P. multiflorum* of Roth, and the *Dryopteris aristata* of the most modern school of botanists, is one of the commonest

² *British Ferns and Where Found*. London. 1908.

³ *British Ferns and Their Varieties*. London. No date (1912).

ferns of our non-calcareous districts, and may be thought to be thoroughly well-known. Nevertheless, it is by no means easy to define its exact limits as a species, and there is still much variety of opinion on the subject among botanists. The German botanist, Roth, who is said by Newman to have given the first intelligible description of it, speaks of "the very great and really almost insuperable difficulties in the determination of this fern." On the one hand it sometimes closely simulates *L. spinulosa*, while on the other it sometimes approaches, or is approached by *L. aemula* (otherwise *recurva*, *concauum*, *foenisecii*). It also passes by imperceptible gradations into *L. collina* and perhaps *L. alpina*, which are regarded by Wollaston as distinct species, but by others as varieties only. Other "botanical" varieties which have been described are *Smithii*, *dumetorum*, *angusta* and *maculata*, and as far as I can make out the last four names merely indicate "states" of *L. dilatata*, with the possible exception of *maculata* (Deakin). As I have never seen a plant corresponding to Deakin's description, I am unable to pronounce definitely on this.

Lastrea collina (Wollaston), *Lophodium collinum* (Newman) is the *L. dilatata collina* of most botanical writers. Newman suspects that it is the *Polypodium tanacetifolium* of Hoffman. It does not appear, however, to be separated by any very definite botanical characters from *dilatata*, and even Newman, who is, I think, the first of British authors to describe it as a species, is far from precise in his description. He indeed admits this and confesses that he is "influenced mainly by some peculiarity which arrests the eye," but which he has "not been able to describe." After carefully comparing his descriptions of *collina* and *multiflora (dilatata)* I seize upon the following points, all of which are differences of degree rather than of actual character:—*collina* is more lanceolate in outline and shorter in the footstalk than *dilatata* and less acutely toothed. He says that the stipes, or footstalk, in *collina* is "notably shorter than the [rest of the] frond," while in *dilatata* it is "nearly as long as the frond." In our Berkshire woods we have a form which agrees with Newman's somewhat unsatisfactory description and which I take to be his *collina*. The peculiarity which arrests the eye, but which he finds it impossible to describe, I should put down as a less leathery texture and a somewhat finer subdivision of the ultimate parts, i.e., a slight approach to the plumose character. The form is, however, not sharply marked off from *dilatata* by any of these rather indefinite characters, but merges into it by imperceptible gradations. I do not regard it, therefore, as a species, nor even as a good variety, although no doubt plants can be picked out which are distinct enough to the eye.

L. alpina (Wollaston) is a much more distinct variety of *dilatata*, of which it is a mountain form, but is separated only by its smaller stature, thinner texture, and most of all by its perfectly deciduous character, all of which differences are maintained when it is removed to the lowlands and even when it is cultivated under glass in the South. I am not sure whether there are intermediate gradations between *alpina* and *dilatata*, as the former does not grow in my neighbourhood. The testimony of our Scotch members would be valuable on this point.

L. spinulosa may be distinguished from *dilatata* by the more lanceolate outline of the fronds, the creeping rhizome, and the whole-coloured scales. The species can be distinguished by the decumbent (instead of erect) caudex in a very early stage; as soon as a distinct crown is formed it assumes the horizontal position—often before the fronds are an inch in length. *Dilatata*, on the other hand, when growing naturally, has the caudex erect and forms a perfect shuttlecock. Of course, the crown may be tumbled over by stress of circumstances and may thus be found temporarily prostrate, but even then, as soon as it has taken root in the new position, the point turns upwards and it begins to reassume the erect attitude. The scales of the stipes (footstalk) form another distinguishing character, for while those of *spinulosa* are broadly ovate and of a uniform light brown colour, those of *dilatata* are lanceolate-ovate, more acutely pointed, and have each a dark chocolate coloured stripe passing from base to apex. There is also, in well-developed scales, a narrow margin of extremely thin tissue which appears paler than the general colour, so that the scale contains really three shades of brown in distinct bands. The central dark stripe is very characteristic of *dilatata* and its geographical forms or subspecies *collina* and *alpina*, and in my experience can always be relied upon to distinguish them from both *spinulosa* and *aemula*. Newman however describes another species, *L. glandulosa*, which resembles *dilatata* generally, but has scales like those of *spinulosa*. I have myself never seen a plant conforming to Newman's description. I have had fronds sent to me as *L. glandulosa* (Newman), but they appeared to be merely glandular forms or states of *dilatata*, and always had the dark-striped scales characteristic of that species. *Maculata* (Deakin) is another form described as having concolorous scales, the name *maculata* being taken apparently from patches of darker colour on the fronds and not referring to the scales at all. These patches of darker or brownish green are however very common on *dilatata* when frosted or weather-beaten, and are not reproduced on fresh fronds grown under glass or in a thoroughly sheltered position. Another character

upon which great stress has been laid in botanical text books is the indusium or involucre, which is said to be fringed with stalked glands in *dilatata*, and with stalkless glands in *aemula*, while it is smooth and entire in *spinulosa*. Newman gives very exact drawings of the indusia of the three species, looking at which one would imagine they would be easily distinguished by the indusium alone. Of course it is only during a certain stage of development that this appearance can be discovered ; that is, when the frond is mature, but before the spores begin to fall. When I first examined these species for the characteristic indusia, I found Newman's picture, in the case of *dilatata*, very closely simulated by the radiating heads of sporangia projecting from beneath the covering indusium giving an almost exact reproduction of Newman's drawing. I was inclined to suspect that Newman had discovered a mare's nest, and that the heads of the sporangia projecting more or less in the different species represented the so-called glands, stalked or otherwise, according to the amount of their emergence. Upon dissecting off the indusium with a fine triangular needle, and examining it alone under a low power of the microscope, I found the projections were really there as outgrowths of the cellular substance of the indusium itself. They were, however, much less diagrammatic than in Newman's figures, and I should not advise even the botanist, and much less the beginner in fern studies, to rely upon these appearances as distinguishing characters of the species. They are, however, striking examples of Newman's power of minute and careful observation.

A much more obvious character, by which the species can be distinguished, even in the absence of fronds, is the appearance of the crown of the living plant, especially in the autumn or winter. In *dilatata* the crown resembles a *symmetrical* nest, with dark brown eggs evenly disposed and pointing upwards or radiating outwards ; while in *spinulosa* it is *unsymmetrical*, with light brown eggs pointing sideways and all in one direction ; in *aemula* it is again a symmetrical nest, but with well-formed eggs only around the circumference of the nest, those toward the centre being more or less fused together and undistinguishable as separate units. The "eggs," which of course are the incipient fronds of the next season, are covered with scales, which are pale brown or whitish in *aemula*, darker in *spinulosa*, and darker still in *dilatata*. In the two latter species the scales lie closely packed, and the "eggs" consequently are smooth and sometimes even glossy, while in *aemula* the scales stand more or less on end and give the "eggs" a rough or woolly appearance. Still another character by which *aemula* can generally be distinguished is the scent, which, however, is only perceptible while the fronds

are undergoing the drying process. While perfectly fresh the fronds, like the stems of the Sweet Vernal Grass (which gives its well-known scent to half-made hay) are perfectly odourless, but during drying the *cumarin* scent is obvious and unmistakeable. When the fronds become quite dry, or very shortly afterwards, they are again quite scentless, so that this character is of little or no use in the case of herbarium specimens. Although I have known *aemula* under cultivation for nearly fifty years, I had a very imperfect idea of its real beauty until I saw it a few years ago growing in wild luxuriance in Co. Donegal. When really at home, as there, it is a lovely fern of a vivid grass green colour, by which it can be distinguished at a considerable distance before its form can be made out. The crispate surface gives it also at a distance a peculiarly velvety look, which is very characteristic.

A very puzzling ally of *dilatata*, though not a very close one, is *L. remota* of Moore. It is not a real natural species, because it is nowhere found wild in quantity, and does not, so far as is known, reproduce itself from spores. It is generally regarded as a hybrid between *L. filix-mas* and *L. spinulosa*. It has the outline of the former, with the more divided pinnules and spinulose teeth of the latter. It has also the erect caudex of *filix-mas* and *pseudo-mas*, and will in time develop a trunk like the latter. The scales are intermediate in character between those of the supposed parents, and are quite devoid of the dark stripe of *dilatata*; the outline of the frond is also quite different from that of the latter species. There is still scope for cultural investigation as to the real relationship of this fern.

Another puzzling fern is Mr. W. B. Boyd's hybrid, or quasi-hybrid, found near Loch Lomond. It has a general resemblance to *remota*, but the fronds are broadest at the base, like *dilatata* (although much narrower than that species) and it has the *long* stipes of *dilatata*. The scales have a dark brown patch in the centre, but this does not extend the whole length of the structure, but breaks off more or less abruptly about half-way up the scale. This dark patch, to my mind, is certain evidence of its relationship to *dilatata* rather than to *spinulosa*.

It appears to bear abundance of spores, but I have not heard that anyone has succeeded in growing these into plants. I at first, with others, regarded this fern as a hybrid, but after cultivating it for a couple of years, I feel less positive on the matter. It may turn out to be a form of *dilatata*. If so, it is a very distinct one.

Another mysterious fern is one found by myself in Devonshire in 1913. When found, it had but one frond, which in outline and cutting had more resemblance to

L. dilatata than to any other species. The scales, however, were those of *felix-mas*. It produced a few spores, which were sown as soon as ripe. In 1915, owing probably to some check in growth, it took on a roguish or ragged character and appeared most like a bad rogue of *felix-mas*, the only *dilatata* character remaining being the spinulose teeth around the margins of the pinnules. This year (1916), although the first fronds were ragged, the plant is regaining its symmetrical character, and the later fronds are handsome and well-formed. It looks like a very foliose subdeltoid form of *felix-mas*, and this is what it will probably turn out to be, although even yet its actual relationship cannot be regarded as quite settled. The seedlings, sown in 1914, are now coming on freely. They have a general resemblance to the parent, and are so much alike that I regard the batch as a pure culture. In the young state all have a strong resemblance to *dilatata* . . . but as they develop, the *felix-mas* character gradually comes out . . . I have not yet seen one which has the bicoloured scales of *L. dilatata*, but this character is not easily made out in the young state . . . In 1915, Mr. Boyd's plant produced *one frond* with unspotted scales and this was practically identical in character with some of the fronds on my fern . . . I have not touched upon . . . *L. cristata* and *L. uliginosa*. These are only indirectly allied to *dilatata* (through *spinulosa*) and are in no danger of being mixed up with it.

F. W. STANSFIELD.

THE NAMES "OAK FERN" "BEECH FERN" GYMNOCARPIUM DRYOPTERIS AND PHEGOPTERIS POLYPODIOTDES

In the "British Fern Gazette" for March, 1916 (Vol. 3, No. 27) the late Dr. F. W. Stansfield had an article on the origin of these names, as regards the English translation.

Alluding to the inability of Sir J. E. Smith and E. Newman to explain them, the Doctor went on to offer two tentative reasons for Linnaeus' choice: first pointing out that the original botanical names were *Polypodium dryopteris* and *P. phegopteris*: and that the English words are simply literal translations.

Linnaeus (the Doctor said) was very much drawn to spring-time foliage; and the Oak fern has a velvety bloom on its fronds, not unlike that on the young leaves of the Oak tree: while on the young frond of the Beech fern there are hairs comparable to those on young Beech tree leaves.

As an alternative; the shape of pressed fronds of both ferns has an outline more or less resembling that of the two trees.

These suggestions were given "for what they are worth"; the present writer does not know if the problem has been solved, and so re-states it, with notes.

I. The specific names.

Dryopteris. This is a compound of two Greek words: drus (pronounced as in the English surname Druce), meaning (a) and Oak, (b) any timber tree: and pteris, a fern.

It may be noted that the name when used for a genus, replacing the more familiar *Lastrea*, is translated "Wood fern" by American Botanists. Used for a species, we get Oak fern, with no difficulty over derivation.

II. *Phegopteris*. This too is a compound; phegos (pronounced Pheegos) and pteris. Here, difficulty begins.

The *Latin* word for a Beech tree is *Fagus*: very similar in spelling and in pronunciation. In Lewis and Short's Latin-English dictionary, the two words are said to be identical in meaning: a Beech tree.

Smith's Latin-English dictionary says phegos is a word allied to *fagus*, but is the name of a different tree.

Greek Lexicons: that of Stephanus, which was extant in Linnaeus' day, and would probably have been used by him if necessary, is Greek-Latin.

This states that phegos is the Beech tree, but that some authors say it is the Oak; one of the later being Theophrastus, about 300 B.C.

Liddell and Scott (Greek-English) are very definite: phegos is *Quercus Aegilops*, Valonia Oak. Theophrastus is again quoted in support of this. This Lexicon says *Aegilops* is *Quercus Cerris*.

According to Bean's Trees and Shrubs, *Q. Aegilops* and *Q. Cerris* are distinct but allied species.

So far then evidence favours phegos as a kind of Oak.

III. *Linnaeus*: *Species plantarum*. General heading to this section of his genus *Polypodium*. (Translated.)

Frond sub-bipinnate, the pinnae confluent at base, so that (the frond) is semi-bipinnate rather than fully doubly-pinnate (duplicato-pinnata). Page 1,550, No. 36. *Polypodium Phegopteris*.

Fronds sub-bipinnate: lowest pinnae reflexed: equal, United with a quadrangular pinnule. *Flora Suec*.

Polypodium pinnatum. Pinnae lanceolate, pinnatifid, whole; the lowest drooping. *Flora lapp*.

Linnaeus then quotes the descriptions of three other authorities besides his own; these can be disregarded as either adding nothing, or agreeing with his account. He then continues—

(This species) grows “in Europae fagetis” and in Virginia.

“In Europae fagetis” appears to mean “In beech-woods of Europe.” Page 1,555, No. 63. General heading: Frond fully divided.

Polypodium Dryopteris.

Fronds fully divided: pinnae threefold, bi-pinnate. Flora suec.

Trifid, the branches pinnate: pinnae pinnatifid. Flora lapp. Two other authorities quoted.

He continues: It grows in woods, in Europe.

NOTE.—Linnaeus’ genus *Polypodium* contained a large and mixed number of species, most now put in other genera.

His use of the word cannot be taken as proving the identity of any species included in it by him.

Summing up Section III.

The two species clearly have not, in Linnaeus, the close association given them by other later writers.

In what has been stated here, the only reason for thinking that Linnaeus in his description of *phegopteris* connected *phegos* with Beech, is in the word “fagetis.”

This does not occur in Lewis and Short: it can only mean a Beechwood. As that is a unusual habitat for ferns, it may be regarded with some suspicion as a means of proving that *phegopteris* means “Beech fern.”

IV. Linnaeus studied and acknowledged the works of many Botanists who preceded him. One was Bauhin who, in his “Pinax” collected extracts from very ancient to more recent botanical works, including that of Theophrastus; with which therefore Linnaeus may have been acquainted.

CONCLUSION. The suggestion is that Linnaeus meant, by “*Phegopteris*,” to signify a fern which in some way had a resemblance to a species of Oak; and by “*Dryopteris*,” another fern, resembling another species of Oak.

This brings back the original question: Why did he choose the names? Bean (*Trees and Shrubs*) describes a variety of *Quercus Aegilops* with leaves dull grey and downy on the underside: and says *Q. Cerris*, closely allied, has leaves dark green and downy above, grey-green and downy below.

There is in this a suggestion of the texture of *phegopteris*; in marked contrast to the smoothness of the leaves of *Q. robur*,

our common Oak; and to the texture of dryopteris. T. Moore (8vo. Nature printed British Ferns) actually calls the latter Smooth three branched Polypody.

A further question: Why did Linnaeus choose the names for these two ferns when there are others with the characters just mentioned? The Limestone Polypody, for one, with rough surface, or *Cystopteris fragilis*, equally smooth. As to the former of these, he did not distinguish it as a species. Also in any case, neither is a true woodland fern. Nor did he name or describe a great number of species.

One can here only guess there was some link between fern and tree in each case, which forced itself on his notice as he looked at one of them.

E. A. ELLIOT.

POLYSTICHUM ACULEATUM PULCHERRIMUM, BEVIS

This refined and highly interesting variety is very well known; but not much information about it has appeared in the "Gazette" for some time, and perhaps a few notes on it will not be unwelcome.

It was found by Bevis in 1876—several plants together in a hedge by a ploughed field, probably somewhere between Hawkchurch, a village some three miles N.E. of Axminster, and Thorncombe, about three miles further to the N.E. Bevis took the fern to Dr. Wills, who lived at Thorncombe.

The fern has rather small cuneate pinnules set with the point on the secondary rachis. The pinnules become concurrent towards the apex of the frond, the pinnae at the same time tending to curve upwards. The frond thus appears to run out to a fine point. The colour is dark green and the texture almost silky. The fern is generally barren. No spores were seen on it until 1882. It is evergreen.

The experts felt bound to name the fern either *aculeatum* or *angulare*, and it seemed to be nearer the former than the latter. It was rather unfortunately named "*pulcherrimum*," as this adjective is used with "*angulare*" to denote a capacity to produce prothallic extensions (without artificial encouragement). But for the confusion caused by name changes, "*pulcherrimum*" would probably have been replaced by "*plumosum*."

The origin of the fern has always been a puzzle, and cytological examination could not clear up the mystery.

Although the variety is not *prima facie* an extreme form there is little doubt that it is very abnormal. It is almost certainly a second break at least rather than a first break, and

it is hardly likely to be a break from a normal *aculeatum* (or *angulare*) at all. It seems more likely to be a break from some intermediate form in the *aculeatum*-*angulare* complex; and this conjecture receives some support from the examination of forms during last year's official excursions which were based on Chard, between four and five miles N.W. of Thorncombe.

In the country within six miles of Chard in all directions there can be found intermediate forms which are of a rather deeper green than normal *angulare* with pinnules somewhat cuneate. Although this variation is slight, it is not to be seen everywhere, and it is perhaps not a coincidence that "Bevis" was found in this area. Subject to what our expert cultivators may think, Bevis does not look like a fern which would be found in dry open places, such as the place where it was discovered might be taken to be from the description. But it so happens that between Hawkchurch and Thorncombe there are a stream and some damp fields, and near them a copse where moisture-loving ferns are to be seen; and some hedgerows might be damp and shady.

This variety is not only an extremely fine one in itself, but from the few spores which it has produced splendid varieties have been raised, particularly the *gracillimums* and Green's *plumosum*, and subsequently, from a different offset in the hands of J. Edwards, a dense foliose form.

Some flourishing plants of Bevis are in the hands of members, and it is hoped that a constant watch will be kept for spores—a careful scrutiny may be necessary, as the sporangia may be of a peculiar type.

A sowing could hardly fail to produce valuable progeny. The raising after a blank period of many years of a good fern to which the Society's Certificate could properly be awarded is much to be desired.

P. GREENFIELD.

THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are :—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually once a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members and to any new fern reaching a high standard the Society will award a Certificate

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary,

Rev'd. E. A. ELLIOT,

South Stoke Vicarage,

Near Reading.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to :

THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
VINCENT SQUARE, LONDON, S.W.1

Botany
VOL. VIII

No. 5

- The -
**British Fern
Gazette**

1955



EDITED BY

Revd. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII

SPRING, 1955

No. 5

CONTENTS

	Page
EDITORIAL NOTES	105
FRONTISPIECE	107
ANNUAL MEETING, 1954	109
FERNS IN INDONESIA (The President)	110
THE BORROWDALE EXCURSION, 1954 (Mr. J. W. Dyce)	115
SNOWDONIA (Dr. Swinscow)	118
ASPLENIUM GERMANICUM (Mr. P. Greenfield)	121
SOUTHPORT SHOW, 1954	123
CEYLON FERNS (Dr. Swinscow)	125
FERN GOSSIP... ..	126
CYTOTYPES OF POLYPODIUM (Dr. Swinscow)	128
LIST OF MEMBERS	129

EDITORIAL

Recent achievements in the study of plants, and not least in Ferns, have reached heights (perhaps one should rather say, depths) which may lead to the thought "what is the value and purpose of a Society such as ours, to-day?"

The mere fact that records of these successes are published, and are thus available, is probably answer enough.

Reading through even a few of them, there are indications, too varied and too numerous to set out in detail, that there is still a place, and functions, in the botanical world, for the amateur as such. And in any case, it is the amateur who, to adapt and misquote the words of a famous mountaineer, is really referred to. When he was asked why climbers persisted in trying to reach the top of Everest, his answer was simply "Because it is there." And, isn't that in itself the reason why the amateur goes on growing ferns, or potatoes, or flowers? because they are there — to be grown for sheer enjoyment sake.

We understand that closely allied pleasure and success came to our President, Mr. A. H. G. Alston, on his plant-hunting expedition last year in Indonesia; where, he tells us, there were no excitements of a dangerous nature as far as he was concerned: and from which, we are glad indeed to say, he returned in October, in excellent health. An account

MAY 23 1955

of his travels, which he has kindly written for us, will be found on another page.

In the account of Southport Show, reference is made to this Editorial: as we feel some suggestions on exhibits are more in place here, and may, we hope, be found of service to exhibitor-readers: these remarks concern the matter of Quality. This word can be taken as referring chiefly or only to the rarity, or the attractiveness, or the peculiarity of variation, of a fern — or any plant. But it means equally, from a Show standpoint, good cultivation: which is not evident when a fern is shown with broken fronds: or fronds damaged in other ways: or when stumps, often some inches long, are left of last year's fronds: or when the pot is dirty, or cracked, or even chipped noticeably. Damage, admittedly, can happen in transit: but, drastic as it sounds, the removal, on reaching the Show bench, of a frond or even two, unless there are very few to start with, is better than leaving one hanging down or another barely held up by its neighbours.

Stumps can always be removed at home: and pots made presentably clean. We offer the foregoing with an eye — and ear — open to the effect on the visiting spectator: which we feel sure, all exhibitors will wish should be of admiration only.

It was a very real pleasure, on a visit to the Natural History Museum last October, to meet Mr. C. V. Morton, the Editor-in-chief of the American Fern Gazette; who was busily working there for some time, after a European tour: and in the following month, at the Botanical Society's Exhibition, Professor J. Ewan, former President of the American Fern Society. We understand that Mr. E. Wiper was also in England last year, and regret not having had the pleasure of meeting him, one of our Members of very long standing.

We, and our Printers, apologize for a mistake in the presentation of part of the plate in Volume VIII, No. 4, the 1954 Gazette. By an error which no one can explain, *Hymenophyllum peltatum* is printed upside down.

The Treasurer informs us that he has for sale, at six shillings each, postage extra, one copy of Druery's "Choice British Ferns" and one of the same author's "Book of British Ferns." The Editor has also for sale, postage included, Schneider's "Choice Ferns for Amateurs," at 6/-: Sowerby's "British Ferns" at 7/6 and Druery's "Book of British Ferns" at 6/6.

Since our last Annual Meeting in May, we welcome as new Members the following: Mr. J. A. Crabbe (British Museum, Natural History): Messrs. G. and R. Perry (Enfield): Dr. S. Walker (Liverpool University): Mrs. J. G. Neilson (Edin-

burgh) : Miss J. E. Harvey (Edinburgh) : Mrs. M. C. L. Bassnett (Tarleton) : Mrs. E. M. Arksey (Sheffield) : Dr. B. R. Allison (Long Island, New York) : Dr. R. C. Benedict (New York), President of the American Fern Society : Mr. John D. Lovis, B.Sc., the University, Leeds : Dr. W. D. Hincks : Mr. P. Smithers, M.P. The meeting on August 10th at the Natural History Museum (London) drew a few Members but provided them all with real interest : and pleasure at once again meeting our worthy ex-secretary Mr. J. R. Pulham. Dr. Swinscow brought some photographs ; as usual, excellent : and fronds were shown by Mr. Greenfield, including his *Lastrea f-mas depauperata cristata*.

Mr. Dyce had fronds, from a ravine near Inverness, of Oak and Beech ferns, collected on account of their abnormal size : far larger than something of the same kind noticed in Borrowdale, high up in woodland above Grange. This meeting has been voted a success ; and since then, Mr. Dyce has suggested a similar one every quarter of the year : the first of these will therefore be held at the same time and place as the Annual Meeting : for which, please see the Notices which follow. E.A.E.

NOTICES

The Annual General Meeting will be held on Thursday, May 26th, at 3.0 p.m., at the British Museum (Natural History), Cromwell Road, S.W.7. It will be preceded by a Committee Meeting, at 2.30 p.m., at the same place.

The Treasurer wishes to remind Members that the annual subscription of 10/- is due each year on July 1st : and he also hopes that any arrears will forthwith be made good.

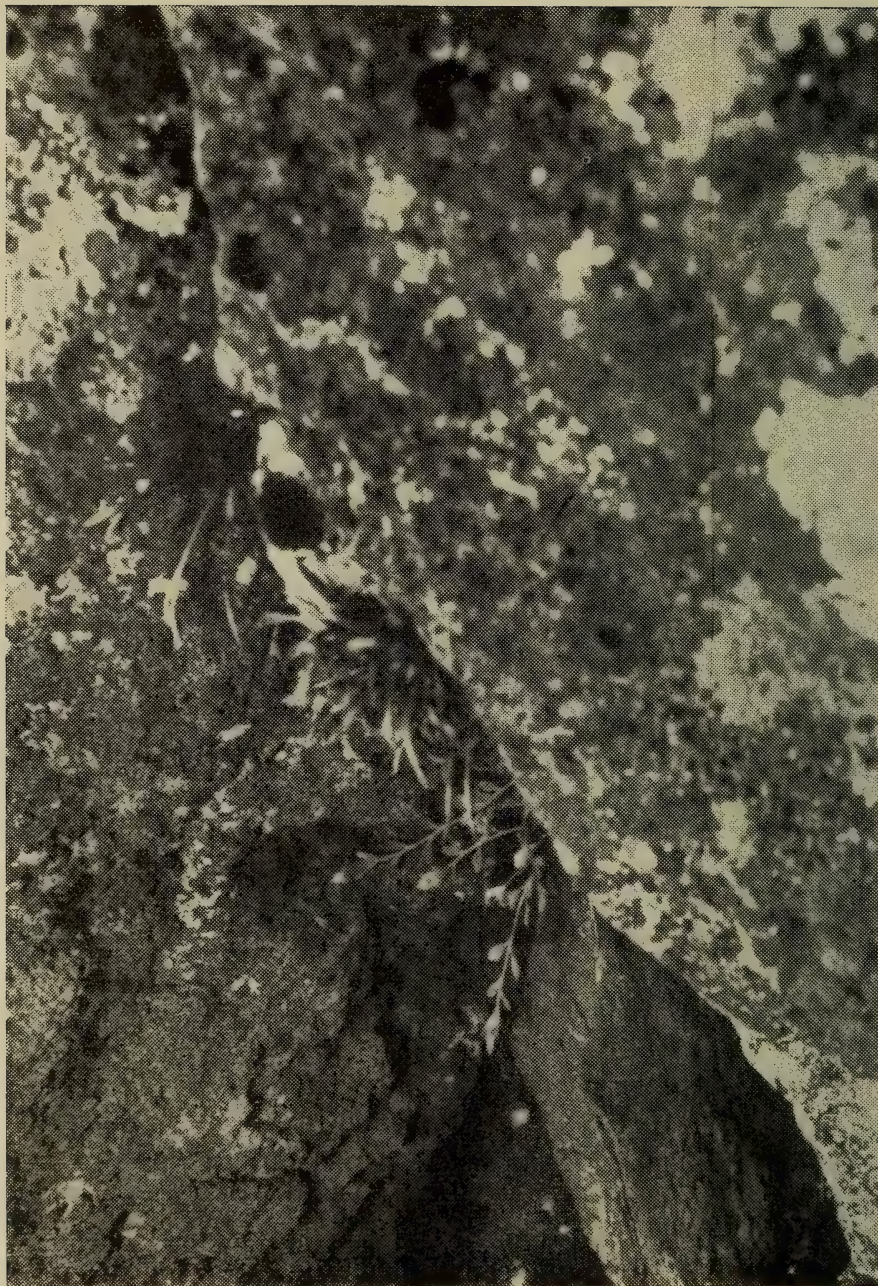
Our next Gazette issue, following the plan of publishing every nine months, will be due in December. We hope and expect to keep our present Contributors, to whom our thanks for help are expressed : and we ask, once again, for more and new assistance in this way, so that we can keep our ideas fresh and up-to-date.

The Excursion this year has been fixed for August 27th to September 3rd, at Kendal, Westmorland. Further details as to accommodation (which must however be arranged by Members individually) can be had from the Hon. Secretary.

Members are asked to make special note of these Notices, which will probably not be sent out again.

FRONTISPIECE

This, and the other excellent photograph, which are both the work of Dr. Swinscow, are referred to by him in his article on Snowdonia in the present issue : and, in the case of the first, also by Mr. Greenfield.



Asplenium X Breyinii

THE 51st ANNUAL MEETING

This was again held at the British Museum (Natural History), by kind permission of the Trustees: at 3.0 p.m., on May 27th, 1954. Seven members were present.

Mr. T. H. Bolton took the chair, the President being on a plant-hunting expedition in Indonesia.

The elections were as follows :—

President : A. H. G. Alston, Esq., M.A., F.L.S. Vice-Presidents : Revd. E. A. Elliot, Messrs. R. Whiteside, T. H. Bolton, Professor Holttum, Mr. R. Kaye, Dr. S. P. Rowlands. Treasurer : Mr. J. W. Dyce. Auditor : Mr. P. Temple. Secretary and Editor : Revd. E. A. Elliot. Committee : Dr. J. Davidson, Mrs. J. Healey, Mrs. F. Jackson, Mr. A. Brunt, Mr. D. F. H. C. Russell, Mr. J. D. Dixon, Mr. H. Wainwright, Mr. P. Greenfield, Dr. T. D. V. Swinscow, Mr. B. Hayhurst.

In his report, the Treasurer expressed satisfaction with the Society's finances, 59 payments including eleven arrears and eleven advance, from 85 subscribing members, being satisfactory : as further amounts due were expected. He drew attention to the other income, especially thanking all who had helped to raise the sale-money at Southport : and Dr. Swinscow for his generous contribution.

Expenses included the cost of two issues of the Gazette, this being due to the plan of publishing at intervals of nine months.

His provisional balance estimate for June 30th was £42 1s. 4d. It will be seen from his statement, drawn up after that date, that the actual amount was larger. The Report was accepted, with thanks to Mr. Dyce for his work.

FINANCIAL STATEMENT at 30th JUNE, 1954

[illegible]

Three new Members were elected: Mr. L. F. Judge (Yorkshire); Professor Dr. R. E. G. Pichi-Sermolli (Florence, Italy); Mr. Boughton Cobb (U.S.A.); and the formal election of Professor Manton and Dr. Warburg, as Honorary Members, followed.

In the Secretary's Report, reference was made to the President's expedition, which was understood to be proceeding satisfactorily.

The Bureau allotted to the Society at Southport Show for the first time in 1953, had proved most successful. Thanks were due to all who had helped in this result.

Scientific work was being done by some of our Members, and field-work by others, all with energy. Ferns were also to the fore in recent work carried out by other societies.

It could be said that interest in our special sphere was as alive as ever and going on in a quiet but most gratifying way.

A discussion followed on the revival of the issue of certificates for new ferns found or raised, of sufficient merit. No decision was made, but a meeting was fixed for August 10th when, it was hoped, plants or fronds would be shown.

A vote of hearty thanks to the Chairman ended the meeting.

FERNS IN INDONESIA

by

A. H. G. ALSTON

I left England in October 1953, and arrived at Djakarta, after an air journey of three-and-a-half days, which included stops at Karachi and Bangkok. Djakarta is the capital of Indonesia, and from there there is a level road through villages and rice fields to Bogor, where the Botanical Gardens are situated.

These Botanical Gardens were founded in 1816, and the first director was a German named Reinwardt.

Bogor is now the chief centre of scientific work in Indonesia. Part of the University, the Forest Research Institute and Agricultural Experiment Station are at Bogor. The Herbarium and Botanical Gardens are also very fine, and the Treub Laboratory is located in the Gardens. Here I stayed for some weeks in a house actually in the Gardens, and so able to explore them very thoroughly. The collection of ferns used to be a very good one, but there is not much left now, owing to an attempt to move the collection made by a former director, and partly owing to neglect during the Japanese occupation in the war. However, it is gratifying to know that the Indonesian Government are keeping up the Garden and that the scientific work is continuing. It is still



Woodsia Alpina

possible for foreign visitors to work at the Institution as in former times.

One fern of particular interest which I saw in the Gardens was *Macroglossum Smithii* of which the original plant from which the species was described, still survives.

The fine plant of *Platycerium Wilhelminae-Reginae* which used to be a feature of the Gardens was carried off by the Japanese during their occupation. The plant of *Rafflesia patma* also died in the Japanese time.

One of the features of the Gardens which will interest English visitors is the handsome memorial to the wife of Sir Stamford Raffles which was erected during the British occupation of Java in the Napoleonic war. A clause of the treaty under which the island was returned to the Dutch, provided for the upkeep by them of this monument, and it seems that the Indonesians regard themselves as under the same obligations, as I noticed that the monument was carefully restored during my visit to the country.

In Java the disturbed state of the country makes conditions difficult, but I was able to spend a few days at the mountain Garden of Tjibodas, which is surrounded by almost virgin forest. Though the area is well-known, this was a fine centre for collecting ferns, and every excursion produced a large number of species which I had not seen before. Some of these have proved to be surprisingly rare in collections, having only been collected once or twice before.

After leaving Java, I went by air to Sampit on the south coast of Borneo, my Indonesian assistant going on ahead by sea with the heavy equipment. Sampit was not a very good centre for ferns, but there were many interesting flowering plants. It is the headquarters of a timber company which is engaged in felling trees for newspaper pulp. Hence it was fairly easy to get into the forest along their light railway. The forest here consists largely of a species of *Agathis*, *A. borneensis*. This tree is allied to the *Kauri* pine of New Zealand. This forest is on the drier land. The forest near the river is usually swamp-forest with a considerable variety of trees with closely matted undergrowth. It is very difficult to walk through as the ground is very boggy in addition to the tangled growth of the trees.

After a week in this place I went for a three days journey up the Sampit river by a motor-launch. This river is about the size of the Thames, with the banks covered with forest. Here and there, there is a clearing for cultivation, or more frequently an abandoned clearing which is gradually reverting to jungle. There were a few clumps of the mangrove fern, *Acrostichum aureum*, growing on the banks, which was surprising as the water is quite fresh here. On some of the trees

I saw some magnificent specimens of *Platyserium coronarium*. After three days travel on the river by a small launch equipped with an overboard motor, we stopped at a place called Permantang. This village which is inhabited by Dyaks, consists of a single street, with houses built on piles because of the danger of flooding. An interesting feature was the large number of carved wooden images in front of some of the houses and scattered along the village street. From here we went with the Dyaks into the forest following the paths which they use for hunting. These are in general hardly visible to the stranger and one is often forced to balance oneself on the trunk of a fallen tree to get over a difficult patch.

The forest was more varied than at Sampit, and there were interesting sandy areas with *Dacrydium* trees.

After returning to Java from Borneo, I left as soon as possible for Sumatra. Here, work was started at Padang on the south coast, and an excursion was made to Mount Kerintji, which is the highest mountain in Indonesia (12,000 ft.). Here I stayed with a Dutch planter of a tea estate on the upper part of the mountain. It was a very good centre for ferns and other plants and four hundred different species were collected in one week. The top of the mountain is rather bare, then comes a paler green belt, which consists, I was told, almost entirely of ferns, probably *Histiopteris*. Below that, there is forest. In my excursion I did not get beyond the forest owing to lack of camping equipment. It would not be very safe to remain in the forest after dark as there are many tigers there.

After crossing Sumatra to the town of Medan, I went to a new centre at Kubatjane, in the province of Atjeh. This was a little too low and too dry to be very good for ferns, but the next station, Sidikalang, to the West of the Toba Lake was a very good centre from which it was possible to reach the forest at high elevations and collect large numbers of ferns. Among these I noticed a *Polypodium* related to a Himalayan species which seems not to have been recorded from Sumatra. The flowering plants included several species of *Rhododendron* with red, white, and orange flowers. After some further collecting in Sumatra, including a day on the Asahan river on the East coast, which is reminiscent of Borneo, I returned to Java and started preparations for a visit to Celebes.

The Southern part of the island is not suitable for botanical exploration for political reasons, but the extreme tip of the North-Eastern peninsula, called the Minahassa is reasonably quiet. On this occasion, I went by sea from Java and disembarked about a week later at Menado in Celebes.

This island is more rugged than Java though the mountains are not so high. Instead of the level plain which one finds all along the North part of Java ; here the mountains seem to rise almost directly out of the sea. Most of them are volcanoes, and some are still active. There is, in Menado a branch of the Vulcanological Survey, and it is a duty of this department to keep a watch on the volcanoes ; the more active ones are visited about once a month to see what is happening, and if necessary to warn the people who live in the neighbourhood. I was privileged to go out on several occasions with a Mr. P. H. Lasut of this Survey, and this was a great help for getting to remote places. Generally speaking, the forest here is on the tops of the mountains and one has to climb in search of plants. However, the flora was very interesting, and on the whole different from that of the other islands which I had visited.

My impression was that some of the species were the same as those which are found in the Philippines.

After two months in Minahassa, I sailed Eastwards for The Moluccas. These islands consist of one large island, Halmahera, which is about the size of Wales, with a number of small islands along its West shore. These small islands are mostly volcanic peaks. Here I stopped in the first instance on the island of Ternate, which is the most important place. This island is rather thickly populated and in consequence, most of the original vegetation has been destroyed, except on the mountain where some remains. The ascent of the peak was very steep and slippery, but it proved interesting for ferns, and I also saw a fine purple orchid which I had not seen before. Later, I arranged a number of excursions to the other island, Tidore, which, like Ternate, consists almost entirely of a volcanic peak. This was a stiff climb like the Peak of Ternate, but we managed to reach the small grassy area on the top, where there were some *Ericaceae*. As extremely little fern-collecting has been done on this mountain, the collection made should be very interesting when it is worked out.

Another excursion took me to the large island of Halmahera, which has no towns, virtually no roads and very little in the nature of a port. Here, an excursion was made to the Peak of Djailolo, and after spending a night in a village at the base, we were able to climb this peak. From the top, there is a fine view northwards of the peaks of Sahu and Gamkhanora. The latter is an active volcano, and the top is rather bare. The collection on this mountain produced a number of new ferns, which seem to me to resemble species which I had seen in herbaria from New Guinea. It was,

I believe, the first mountain on the island of Halmahera to be climbed by a botanist.

After returning to Ternate, I went South to the island of Batjan where I stayed a night in the sultan's palace. This was a well-built house, but almost devoid of furniture and it was not quite a European's idea of a palace. At this place, some coolies were collected and I made an excursion to Mount Sibella, which occupied about four days. This was also interesting as only one botanist had been there before, and his collection was destroyed during the war, before it had been worked out.

From Batjan I returned to Ternate and made my way back to Java, stopping in the Sula Islands, and Islands of Buru and Ambon. After two or three weeks packing up in Java I returned to London by sea.

THE BORROWDALE EXCURSION 1954

The first post-war fern hunt by the Society was held in the Lake District in September, 1954. In the two previous years Messrs. Greenfield and Dyce hunted in the West Country, and endeavoured to reawaken fern hunting instincts in our members, seemingly in vain. It was therefore most gratifying to get a good response when the Lakeland excursion was mooted, although possibly this could have been expected, as the Society is strong numerically in the North. Parenthetically, it is a strange fact that we have very few members in the West Country, which is so rich in ferns and has given us so many of the finest fern varieties we possess.

Most of our party arrived in Borrowdale on Saturday, 4th September, and consisted of members from Warlingham, Reading, London, Preston and Stonethwaite. It gave us great pleasure to welcome our member Mr. H. G. Rugg from the U.S.A., and those of us who had met him during the 1939 excursion were delighted to renew his acquaintance. More members with friends from West Linton and London joined us on the Monday, and Mr. R. Kaye from Silverdale spent a couple of days with us in the middle of the week. Our headquarters were at the Derwent Private Hotel, the home of our member Mr. W. L. Askew, and we were looked after and made very comfortable by Miss Askew. Some members stayed with Mr. Jackson at Stonethwaite and others at Keswick.

After the very wet summer we were hoping that September would be drier, and that we would get some good weather for our hunting, but it was not to be. We arrived on the Saturday in brilliant sunshine, and this weather continued during Sunday, raising our hopes high, but alas! we had only one more dry day, on the Tuesday, and the rest were wet — some *really* wet. However, our enthusiasm remained un-

damped, even when eating our lunch in the scant shelter from cold driving rain, offered by stone walls on the fells. This weather perforce split the party — actually not a bad thing — and only the hardier spirits faced the elements on the high grounds. Others sallied forth from the hotel during dry intervals and hunted the ground in the immediate vicinity. On the wettest days this was all that any of us could do.

Hunting in Lakeland offers much variety, ranging from the rare *Asplenium septentrionale* on the rocks at high altitudes to the lady fern in the wooded valleys, and the ubiquitous parsley fern. In all we recorded 23 species of ferns, all confined to Borrowdale, from which we did not stray during the week. For a fortunate few the high spot of the excursion was the discovery of *Asplenium septentrionale* high on the fells. Some stations of *A. viride* were also found on the heights, while in the valley other spleenworts, *A. ruta-muraria* and *A. trichomanes* were common on walls and bridges, together with *Ceterach officinarum*. *A. adiantum-nigrum* was also found in one or two places. Another fern which was almost common was *Hymenophyllum Wilsonii*, found growing in thick blankets on cliffs, equal in luxuriance to *H. Tunbridgense* in the West Country. *Gymnocarpium dryopteris* was a familiar sight wherever we went in the valley, as were *Dryopteris filix-mas*, *borreri*, *abbreviata*, and *dilatata*, *Athyrium filix-foemina*, *Cryptogramme crispa*, *Thelypteris oreopteris*, and *Blechnum spicant*. Less common were *D. spinulosa*, *T. phegopteris*, and *Polypodium vulgare*. A few plants were seen of *Polystichum aculeatum*, *Cystopteris fragilis*, and *Phyllitis scolopendrium*. Two plants were found by Mr. R. Kaye in a wood among *D. dilatata*, which we have provisionally identified as *D. aemula*. Although in practically all respects they are identical with this fern, yet there were one or two points which led to doubts, and a more detailed examination is necessary to resolve the matter.

Our Society's excursions are held in ferny parts of the country with the object of finding fern varieties, and measured by this yardstick, the excursion under review was not a very successful one. However, in spite of bad weather, and lack of finds, we had a most enjoyable time together, and I for one regard it as very successful, for two excellent reasons among others. After all the dead years during and following the war, we have found the spirit of hunting still alive in our midst, and members are still prepared to face the elements and endure discomfort in quest of ferns. My other is that to most of us the other members are just names in our membership list, and the Excursion gave us the opportunity to meet some of these "names," and to learn something more about ferns in the exchange of ideas and opinions. It is a great

weakness in the British Pteridological Society that we are unable to hold more frequent meetings to discuss and exhibit ferns, for these would enrich both the Society and the individual members participating.

To return to the object of the Excursion, no wild finds of note were made, but hunting as we were in the neighbourhood of the long established Askew Fern Nursery, it is not surprising that we were all able to take home with us some excellent varieties found growing by the roadsides in the vicinity, obviously the results of windblown spores from the Nursery. Such finds included a good form of A.f.f. Frizellae and A.f.f. Victoriae, as well as some crested and crisped male ferns. It was probably a mistake to choose a hunting ground near a fern nursery, for any finds were bound to be regarded with suspicion as originating from cultivated varieties. As it was, on the wooded slopes over a mile from the nursery we found a nicely crested but somewhat depauperate athyrium, and any value this find would otherwise have had was discounted by the fact that we were all definitely decided on its origin. A interesting colony of *Polypodium vulgare* was found on a wall in Grange, and was largely composed of a bifurcate variety among which were some trifurcate specimens.

Further up Borrowdale there is a large wood near Rosthwaite which may be regarded as beyond the influence of the nursery, and in which some good athyriums have been found in the past by Dr. S. P. Rowlands. We planned to hunt this wood but every attempt was defeated by the weather, until on the Sunday following the general exodus of the members, the remaining few were able to pay it a brief visit. One interesting athyrium was found, and indications were that intensive hunting might have been rewarded. In Mr. Jackson's fernery we were able to admire a foliose athyrium which had been found in this wood by Dr. Rowlands.

It was most unfortunate that our visit to Mr. Jackson at Stonethwaite synchronised with the worst deluge of the week, and we were unable to do more than have a quick inspection of his choice collection of ferns, which contains many plants worth lingering over. The visitors from the South were particularly impressed by the healthy flourishing plants of *Asplenium septentrionale* which grew so happily, and obviously very much at home, on a stone wall behind the fern border. Mr. Askew's ferns also claimed a lot of attention, and much time was spent wandering among them, lingering in admiration over, and discussing the fine points of the many good things in his collection.

In spite of the weather, our week spent in happy fellowship with kindred spirits passed quickly, and all too soon we

had regretfully to take our separate ways home, accompanied by our finds, and a feeling of satisfaction that the excursion had been a success.

J. W. DYCE.

A VISIT TO SNOWDONIA

Crossing the border into Wales near Chirk at 9.25 a.m. on June 19 last, I was delighted to see a fine clump of the Great Horsetail, *Equisetum telmateia*, by the roadside. As I am particularly interested in the horsetails, the exuberance of this species seemed to augur well, and it was not long before ferns in abundance were to be seen waving their fronds in the hedgerows as I drove by. Having set off from near London at 4.30 a.m. and been driving up A5 for the previous five hours, I found the sight of them in their thousands cheerful indeed.

On looking through some old numbers of the *Gazette* recently, I came upon an article¹ by Mr. P. Greenfield and the late Dr. F. W. Stansfield describing a visit they paid to Switzerland in 1928. "Arriving at Salvan (Valais) on June 1st, about 3 p.m.," they wrote, "the weather was damp and drizzly, but we put on waterproofs and immediately went out for a walk." How well that word "immediately" strikes the keynote of their expedition — and of so many others.

The clouds were drifting low on Snowdon as I stopped just beyond Capel Curig to eat some sandwiches and take photographs. By 1 o'clock I was pressing on to Pen-y-Pass, the highest point of the Pass of Llanberis. There I left the car and set foot for the first time on the flanks of Snowdon. Up there *Lycopodium alpinum* and *L. selago* were growing in abundance; many plants of the latter bore the little buds by which it reproduces itself vegetatively. Reproduction by spore is uncommon; the prothalli of the lycopods need a special fungus to associate with them, as do those of *Botrychium* and *Ophioglossum*.

After walking for a couple of hours over these fairly gentle slopes I motored on to Beddgelert, where I was to stay for the week. Having settled into the hotel, I went out to inspect the immediate locality. As might be expected, *Asplenium ruta-muraria* was abundant on some of the walls, on one with *A. trichomanes*. Since these two ferns are so commonly associated, the rarity of the hybrid between them, *A. Clermontae* Syme, is rather puzzling.² No ferns of special interest were seen in the village itself, though a fine *Osmunda* was growing in one of the gardens.

¹ *British Fern Gazette*, 1928, Vol. 5, p.255.

² An interesting article on *Asplenium* hybrids by our President, Mr. A. H. G. Alston, appeared in *Proc. Linn. Soc.*, 1940, Pt. 2, p.132.

The next day, Sunday, I had arranged to go out with Mr. Evan Roberts, a distinguished local naturalist. My desire was to see the wild *Asplenium breynii* (*germanicum*) and the Woodsias, and to photograph them if possible. Mr. Roberts enabled me to achieve this (*see frontispiece*). We climbed up to see the *A. breynii* first, a single plant growing on a rather out-of-the-way ledge with *A. septentrionale* round about. They were growing in dry rock fissures fully exposed to the sun and seemed perfectly healthy. In order to photograph the *A. breynii* I had to stand on a rock ledge, and push two of the tripod's unextended legs straight into fissures so that they held the camera about 18 inches from the cliff face, while the third leg was fully extended on to a ledge below, held there by Mr. Roberts, who was standing on a grassy platform below that. I was then able to get a grip with my right hand on a little shelf of rock so that I could swing out and away from the cliff face, thus enabling myself to get behind the camera and focus the fern on the ground-glass screen.

While examining the healthy little tufts of *A. septentrionale*, I called to mind a passage in which Newman describes³ how he carried away from Llanrwst a clump of this fern which had "upwards of three hundred perfectly vigorous fronds, besides an equal number of decaying ones." The load was so heavy that he found it inconvenient to carry only a mile. However, I did not follow his example but heeded his naively appended admonition: "Several botanists have visited the place subsequently, and taken it away in such quantities as nearly to destroy the habitat. . . . I deeply regret the prevalence of this exterminating spirit."

Our next ascent was to see *Woodsia alpina*, and it proved to require a climb of about 2,000 ft. up a steep and sometimes wet and slippery, though not seriously precipitous, hillside down which a mountain stream hurled itself. On the way up we saw that attractive little fern ally, *Selaginella selaginoides*. It is never far from streams and watery runnels, standing on rock ledges or patches of peat where water runs close by; it often grows fully exposed to the sun. Nearing the top of our climb we met a Mr. Gianelli, who had come over the ridge and watched us for some time climbing up towards him. We were now almost at our destination, so without more ado we all three went and admired the *Woodsia alpina*. About half a dozen excellent plants were growing in the cracks of a gulley, and down below, at eye level, was a shelf on which another fine specimen grew. All were on basic rock.

3 *A History of British Ferns and Allied Plants*, London, 1844.

As it was lunch-time and quite a convenient platform was near by, we sat there and had our sandwiches, admiring a splendid prospect of mountains and valleys which seemed to begin just beyond the tips of our boots and recede into translucent mists. While we sat contemplating the scene, a boulder crashed down past our heads about 20ft. away; it had probably been dislodged by a sheep somewhere above.

The next day, Monday, I was on my own again, and as the clouds were impenetrable and the rain was unceasing I decided to go down to the seaside instead of up into the hills. Thus impelled to a remarkably desolate and rain-swept coast, I had the good fortune to make what was in some ways the most interesting find of the week. Tramping over the sandy hinterland at Morfa-bychan in search of *Equisetum variegatum* (which I did not find) I came upon a horsetail, growing quite plentifully, which is probably the hybrid between *E. arvense* and *E. fluviatile*. It is named *E. litorale* Kühlew. I also found an unusual variety of *E. palustre* near by. Its sheaths and their teeth were entirely black, and the stems were speckled with black, giving the plant a strikingly dappled appearance. A few stems of it were growing among the normal form, which it otherwise resembled in every particular.

The Moel Hebog range claimed my attention the next day, Tuesday, in company with Mr. Gianelli. Going up its north side through Cwm Meillionen we saw a fair quantity of *Dryopteris dilatata* with pale unstriped scales. In every other feature, including habitat, it resembles *D. dilatata* and not *D. spinulosa*. The fronds were bearing spores heavily. The Mountain Fern, *Thelypteris oreopteris*, also grew abundantly up there — especially, as is customary, on the stream banks. Higher up I noticed one plant of *Polystichum lonchitis*. After walking about on the mountain tops, and photographing a plant of *Woodsia ilvensis* — the only one seen — we went down the other side into Cwm Llefrith. In the upper reaches of this pleasant valley *Hymenophyllum wilsoni* grows in fresh, broad sheets over innumerable rocks in such profusion as I have not seen elsewhere. An unusual form of *Polystichum aculeatum* was growing by one of the streams down the cwm among rocks past which the water splashed. The pinnae were rather strongly curved towards the frond tips, and the pinnules were broader and fewer than in the normal plant.

The next day, Wednesday, did not produce any finds of note, but the weather was uninterruptedly glorious for a change. On Thursday Gianelli and I went through Cwm Idwal up to the Devil's Kitchen, Twll Du. On the way along the bank of the lake, Llyn Idwal, I noticed *Isoetes lacustris*, the Quillwort, growing near the shore, and waded out to

secure some specimens. The slippery, jagged stones lining the bottom of those mountain lakes almost prohibit paddling — certainly they dispel all pleasure in it — and in addition I could feel the minnows nibbling at my feet and ankles. *Lobelia dortmanna* grows among the Quillworts there, rather resembling them when not in flower. High up below the Devil's Kitchen the Oak Fern spreads freely in the boulder scree, and there too I found a giant form of *Cystopteris fragilis* with fronds about 18 inches long: the two fronds I picked for my collection each measure $17\frac{1}{2}$ inches. There were two of these plants, growing side by side half beneath a boulder.

The weather was again rather wet for my last day, Friday, and I made no notable finds. I did have the pleasure, however, of seeing a magnificent stand of *Equisetum fluviatile* at the edge of Llyn Peris, which lies at the foot of the Llanberis Pass.

Among the ferns which I did not see were *Scolopendrium*, *Ceterach*, and *Dryopteris villarsii* (*rigida*). Possibly the last is extinct in Snowdonia. Nor did I have the good fortune to discover really outstanding varieties, such as the crested *Blechnum spicant* that Dr. S. P. Rowlands found there in 1926.⁴ The *Polypodium vulgare* which grows so abundantly in the valleys is the hexaploid form. Finally, one of my treasured recollections is of a grotto about a yard square in boulder scree, and 2—3 feet in depth, entirely lined with Wilson's Filmy Fern, and through its profuse, glistening tracery of fronds rose in their diverse verdure both the Parsley and the Oak Ferns.

DOUGLAS SWINSCOW.

ASPLENIUM GERMANICUM

Although an old tendency was to give a fern specific rank wherever there seemed to be the slightest justification for doing so, doubt appears to have existed at least from the beginning of the last century as regards the status of the fern variously known as *Asplenium germanicum*, *A. alternifolium*, *A. Breynii*, etc.

In 1821 a French botanist suggested that the fern was a hybrid between *Asplenium septentrionale* and *A. ruta-muraria*.

Francis describes it as intermediate between *septentrionale* and *ruta-muraria*, though more delicate and erect, and lighter in colour: sori smaller and less confluent: not to be mistaken for any of the casual forms of *ruta-muraria*.

Newman in 1854 discussed the fern at some length, though confusedly, and arrived at the conclusion that there was a chain of forms between *ruta-muraria* and *septentrionale*

⁴ *British Fern Gazette*, 1926, Vol. 5, p.151.

among which was *germanicum*. Nevertheless he printed, as indicating opposition to his views, a letter from the Rev. T. Bell written for the Botanical Society of Edinburgh giving sound reasons why *germanicum* should not be confounded with *ruta-muraria*, including a reference to the fact that *germanicum* has indusia entire at the edges. Incidentally it is remarkable that Newman omits Switzerland (*see below*) from the countries in Europe in which *germanicum* is found.

In 1859 Moore stated that *germanicum* was thought to be a variety of *ruta-muraria* but subsequently expressed his opinion that it is intermediate between *ruta-muraria* and *septentrionale*, though distinct from either.

Britten ("European Ferns") says that *germanicum* at one time was considered to be a variety of *ruta-muraria* — a view suggested by Linnaeus — and that others have supposed it to be a hybrid between *septentrionale* and *ruta-muraria* or between *septentrionale* and *trichomanes* — a theory which he considers unsound, especially as *germanicum* is found abundantly in many localities in Tyrol and Silesia where none of the three other species occurs. According to Britten the fern is pale yellowish green in colour, and the sori are at first distinct but ultimately become confluent.

In Gremli's *Flora of Switzerland* (1889 and earlier) the fern is described as about intermediate between *septentrionale* and *ruta-muraria*, and growing generally in company with *septentrionale* and *trichomanes* between which it is considered to be a hybrid by Ascherson and Loret. (Ascherson's *Flora* was published in 1864).

Probably without knowledge of Ascherson's opinion Dr. F. W. Stansfield from his general experience once expressed the view that *trichomanes* might be the second parent of *germanicum*; and there is evidence in this *Gazette* confirmatory of that view. In 1928 Dr. Stansfield and the writer found many plants of *germanicum* in Switzerland in an area at approximately 3,500 ft. where *septentrionale* was very plentiful and, in spite of the absence of lime, *trichomanes* also.

But there remained some uncertainty about the hybridity of the fern. Subsequently, however, examination of the condition of spores and difficulties in germination gave support to the supposition of hybridity. In 1935 M. Paul Kestner wrote from Switzerland that he considered *germanicum* to be always a first generation hybrid — at least as he found it in the Valais (in abundance) and in the Tessin, always between the parents. According to an obituary notice written after the death of M. Kestner by his friend Dr. de Tavel of

Berne, M. Kestner had succeeded in producing germanicum from septentrionale and trichomanes.

Thus, after many vicissitudes it was reasonably well established that *A. germanicum* is a hybrid between septentrionale and trichomanes. If any doubt were left it has been dispelled by further scientific research in the course of which *Asplenium germanicum* has been produced by crossing *A. septentrionale* with *A. trichomanes*.

While changes of name are much to be deplored, there are sound reasons for replacing "germanicum" by "breynii," and in view of the establishment of the fern as a hybrid, *Asplenium germanicum* should now be known as *Asplenium* × *breynii*.

From such information as is available it seems clear that *Asplenium* × *breynii* is always to be found near *A. septentrionale*. Hence it is probably intolerant of lime. *A. trichomanes* seems to prefer lime but grow can without it. In the instances where *A. trichomanes* was said not to be in the neighbourhood of *A. germanicum* adequate search for it may not have been made: in mountain situations it is not always easy to explore surroundings. But spores can of course be carried considerable distances by air currents. It is noteworthy that the hybrid fern in its appearance and requirements is much nearer to *A. septentrionale* than to *A. trichomanes*.

P. GREENFIELD.

[EDITORIAL NOTE.—There are two forms of *Asplenium trichomanes* one only of which, apparently, hybridizes with *A. septentrionale*. They can be distinguished by cytological examination but not very easily by external appearance. The distribution of these two forms is being studied by Mr. J. D. Lovis of the Department of Botany, the University, Leeds, who would be grateful for plants from all parts of the country. Of course a wild plant should not be taken up unless there are others in the neighbourhood. We hope members will, as opportunities offer, collect plants for Mr. Lovis and send them direct to him: a short description of the place where they are found will be helpful, for example hedge-bank, stone wall or natural rock, and whether, if known, the soil or rock contains lime, and what approximately is the height above sea level if this is considerable.]

SOUTHPORT SHOW, 1954

This was the 25th anniversary of the famous Show and it was staged and arranged accordingly; and better attended by visitors than ever: while at the official luncheon on the opening day, the guest of honour, who made an excellent speech, was the President of the Royal Horticultural Society.

A Bureau allotted to our Society in the National Societies tent was in the charge of Mr. B. Hayhurst: our thanks are due again to him and to others of our Members who took spells of duty there, for their invaluable help.

There is no doubt however that the small number of Members able to help in this way means that they are tied

unduly ; and arrangements will be made, for future years, to ensure that their willing and generous assistance does not prevent them enjoying to the full the other attractions of the Show.

In the Fern tent, the total number of plants exhibited was well up to the mark, in fact perhaps larger than in recent years.

Quality was not, on the whole, up to this standard : for this, the season was largely responsible, a fact kept in mind by the judges.

At the same time, many plants were considered by them to be of poor natural condition — season or no — and not worthy of the occasion ; which is, after all, *the* big Fern display of the year, and the best opportunity of presenting to the public examples of what Ferns can be, and of what our Society stands for.

This, an important detail, is referred to more fully in our Editorial.

In the Competitive classes, there were again two entries only of Groups, the winner of which takes the Trophy presented by our Society : this was Mr. John Brookfield, with Messrs. Brookfield and Son second.

These two exhibits were well filled and nicely staged, with a good assortment as regards genera and types of variation : but not remarkable for novelty or individual specimens. In class 10, six hardy British ferns, varieties, there were four entries : the winner, Mr. B. Hayhurst, had a very fine plant of *Polypodium vulgare* Whilharris. He took first place in class 11, *Scolopendriums*, with a crispum *Drummondæ* : crispums were to the fore in all three entries here.

Class 12, *Polypodies*, contained a magnificent *Barrowi*, shown by Mr. Law, the winner. Mr. Hayhurst had the unusual *Cornubiense cristatum* ; and Mr. J. Brookfield, two nice plants in *cambricum* and *semi-lacerum*.

The *Polystichum* class 13, was poor in quality and type, though Mr. Hayhurst had a *gracillimum* as one of the winning specimens.

Athyriums were better represented in the four entries in class 14 : in Mr. J. Brookfield's winning exhibit there was a good *plumosum* *Druery* : but in class 15, *Lastreas* were disappointing : Mr. Law's second prize three had amongst them a very uncommon variety in *propinqua crispa linearis*. Mr. Hayhurst's three however came first. Class 16 was even more disappointing, as there was only one entry of *Asplenium* varieties, although special requests had been made for the inclusion of this class. It is quite probable that it will be

withdrawn from the Schedule but this is a matter for the decision of the Show authorities.

The comparatively new class for hardy normal British ferns, 17, was supported well by five entries and was won by Mr. Rainford : and class 18 for one British fern drew eight competitors, of whom Mrs. Bassnett came first with *Scolopendrium vulgare Campbellii*, a very large and well-grown plant.

In the three classes for Greenhouse ferns, Mr. Hayhurst took two, and Mr. J. Brookfield one, first prizes : other competitors were Mr. Rainford and Mrs. Bassnett.

A non-competitive exhibit, in the big marquee, which drew a great deal of attention and constant questions, was one staged by our Member Mr. R. Kaye, of hardy Ferns, varieties.

This most deservedly won a Show Silver medal : and Mr. Kaye, and Messrs. Perry, are to be congratulated on a Gold medal, for a table rock garden, and water-lilies and plants, respectively : as too is Mr. J. Brookfield for an R.H.S. Silver medal won by a display in a local (Southport) section.

We cannot conclude better than with a reminder that the 1955 Show is on August 24th, 25th and 26th : and with the hope that our Fern exhibitors and their exhibits will be present in good numbers and good health.

CEYLON FERNS

Extending her cytological studies of ferns to include tropical material, Professor Irene Manton led a team of botanists to Ceylon in the winter of 1950-1. The results of their work there have recently been published.¹ While the word "cytology" means in origin the study of cells, that study has come to embrace several entirely separate and diverse branches of investigation. The one that concerns Professor Manton and her colleagues is the analysis of chromosome structure and disposition in the cell nuclei. By examining the numbers of chromosomes in different ferns, and their behaviour at cell division in species and hybrids, much can be learnt about the relationships between the species, genera, and higher orders of these plants. The study throws fresh light on their proper classification, and helps to set them in perspective against their evolutionary history.

Professor Manton and her team examined some 200 species of ferns, most of them from Ceylon but a few from elsewhere. They make a number of suggestions on the revision of fern taxonomy ; since the analysis chiefly affects tropical ferns it need not be detailed here. Their main conclusion is that they find strong confirmatory evidence of parallel and even convergent evolution in ferns. The result is to cast further doubt on the characteristics, such as venation of frond and shape of sorus, that have so often been used for

classification. It seems that similarity in appearance betokens even less community of descent than has been thought. "What is true of sori," write Manton and Sledge, "is certainly true of other characters and it may also be true of chromosome numbers." This last thought raises the reader's eyes to a new horizon of problems.

The genus *Ophioglossum* has sprung surprises on its investigators before, cramming what seems to be a preternaturally large number of chromosomes into its cells. The well-known Adder's Tongue, *O. vulgatum*, Professor Manton has found to have about 510 chromosomes (the technical difficulties of sorting out so many diminutive objects prevented a precise number from being recorded with absolute conviction). Now she finds that its Ceylon relative, *O. petiolatum* has over 1,000 chromosomes (about 1,020), and thus beats the record of about 740 that she had previously reported in *O. pendulum*.² *O. petiolatum* closely resembles our Adder's Tongue, and the problem why such a simple little plant should harbour a greater number of chromosomes in its cells than any other living creature (apart from certain specialised cells in insects) is of extraordinary interest. What possible advantage can the plant have gained over its competitors from such a large complement of genetic material? Man, with all his variations, has only 48 chromosomes to provide the heritable basis of his richly diverse being. Evidently the genes when so numerous as in *Ophioglossum* must lose much of that potency for individual expression that they bear in simpler cell nuclei. In addition, such over-burdened nuclei must be expected for simple mechanical reasons not to be so efficient in cell division. But whatever benefit they may confer on the species remains inscrutable.

DOUGLAS SWINSCOW.

FERN GOSSIP

There are often, perhaps always, some bits of information to pass on to our readers, collected from various sources and of various character: and looking back in the Gazette for a title, the above heading, introduced in June 1921 by Dr. F. W. Stansfield, seemed ideal. We propose to use it regularly, for that reason, and to revive an item which was in the Doctor's hands always of interest and, we hope, will be found so still.

In the Editorial of Vol. VIII No. 4, mention was made of work that has been done on *Dryopteris dilatata*. This has been carried out by Professor Manton; and Dr. S. Walker,

1 Manton, I., and Sledge, W. A., *Philos. Trans. Roy. Soc., Ser. B.*, 1954, vol. 238, pp. 127-185.

2 In *Symp. Soc. Exp. Biol.*, No. 7, 1953.

now of Liverpool University and who, we are happy to say, has become one of our Members.

Their joint work on this fern, and on *D. filix-mas*, has shown that each of these two are descended from two parents ; one parent in each case having been isolated and identified.

It appears that in such cases, the second unidentified parent may no longer exist. Dr. Walker has paid special attention to *D. dilatata*, in the course of which he has found a number of forms varying from the normal well-known type in one or more characters. A peculiar colony, found by Mrs. Healey, in danger of destruction but now in safe keeping, was identified by Dr. Walker as a hybrid, *D. dilatata* X *spinulosa* Rosendahl.

Plants of *dilatata*, typical except for the scales which were of the *spinulosa* colour, were found by Mr. J. A. Crabbe and myself in Borrowdale, last September.

The new British Flora (Clapham, Tutin and Warburg) says this is a recognized feature in mountain specimens.

An historical discovery was made by Mr. N. Robinson when he secured a copy of Druery's "Choice British Ferns" in Preston. It contained a catalogue of James Dickson and Sons, Chester, over 80 years old : listing about 150 *Scolopendrium*, 125 *Athyrium*, 120 *Polystichum*, over 30 *Blechnum*, and many *Asplenium* and *Lastrea* varieties : at prices from 1/- to £1/1/- or more.

There was also a letter dated 3.10.1901 in the book from Mr. J. J. Smithies, in which a trip to Kentmere with Mr. Whitewell was referred to, and the discovery in the previous August there of *Lastrea propinqua divisiloba*.

Reference to our Minute Book showed that this find was made by Mr. W. Troughton : the book no doubt once belonged to him.

In the letter, Mr. Whitewell is said to have found *Athyrium medio-deficiens* on this October visit to the Valley.

We acknowledge with thanks permission which has most kindly been given to refer to two interesting facts noted in the publications of the Botanical Society of the British Isles. One is, that Mr. J. D. Lovis, of Leeds University, has successfully crossed *Asplenium Trichomanes* with *A. septentrionale* producing *A. X Breynii (germanicum)* : the parentage of which had previously been stated, notably in "Welsh Ferns" and in "Flora of the British Isles," to be that which has now been proved experimentally.

The other is, that he has also produced the Continental *Asplenium adulterinum* by the cross *A. Trichomanes* X *A. viride*. Britten (European Ferns) considered *adulterinum* to be a hybrid : without naming the parents. Milde, as Mr. H. A. Hyde pointed out to me, gave this fern specific rank.

It has not yet been found in the British Isles, although Serpentine rocks, on which it grows in Germany, have been searched in Scotland.

An artificially-produced plant of *A. X Breynii* was shown at the Botanical Society's Exhibition in November: and Dr. Swinscow had photographs and specimen fronds of a most curious assemblage of some eight or nine species growing together on the "face" of a railway platform in Bedfordshire.

Both these exhibits attracted much attention from our Members who were present at this Meeting.

Mr. G. Barltrop writes from New Zealand about an interesting experience with a plant of *Platyserium grande*, which grew for over eight years but without producing even one fertile frond.

A young friend, whose father had tried the idea, suggested feeding the plant with chopped banana skin, or an over-ripe banana.

This was done, and a fertile frond duly appeared, together with a barren one of extra large size: a proceeding repeated in the following year.

Mr. Barltrop invites our (Editorial) comment, which is simply that the fruit may have acted as a mulch: we in our turn invite Readers' comments. E. A. ELLIOT.

CYTOTYPES OF POLYPODIUM

A note in the last issue of the *Gazette*¹ described the division of *Polypodium vulgare* into three subspecies according to the chromosome complement of the cells. These cytotypes have, respectively, two, four, and six sets of chromosomes. Which cytotype a particular fern belongs to may be determined with certainty by the number of indurated cells in the annulus round the sporangium. Corresponding with the two, four, and six sets of chromosomes there are five, twelve, and nine indurated cells in the annulus.

I have now had the opportunity, by courtesy of Dr. J. G. Dony, of examining microscopically two herbarium fronds of *P. vulgare*, both some years old. The fact that their sporangia showed the indurated cells perfectly clearly seems worth recording, for a survey of herbarium fronds can easily be carried out, so long as they bear sporangia, to determine what cytotypes they belong to. The two fronds in the Luton herbarium had sporangia with twelve indurated cells, and thus are tetraploids. One was a relatively recent post-war frond, though six years old, but the other was dated 1936 and was therefore eighteen years old. The sporangia showed the indurated cells as clearly as if the frond had been picked yesterday. DOUGLAS SWINSCOW.

¹ *British Fern Gazette*, 1954, Vol. 8, p. 93.

BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are:—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette*, published usually once a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary,

Rev. E. A. ELLIOT,

South Stoke Vicarage,

Near Reading.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to :

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VOL. VIII

No. 6

- The -
**British Fern
Gazette**

WINTER, 1955

EDITED BY

Rev. E. A. ELLIOT, M.A.

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NEAR READING, BERKS.

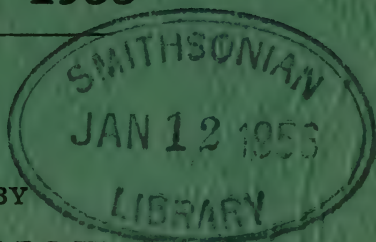
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THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH FERN GAZETTE

NEW SERIES

Vol. VIII.

WINTER 1955

No. 6

CONTENTS

	Page
EDITORIAL NOTES	133
OBITUARY	134
ANNUAL GENERAL MEETING, 1955	134
THE KENDAL EXCURSION: J. W. DYCE	137
FERNS IN BASKETS: DR. SWINSCOW	141
THE WISLEY FERNS: E.A.E.	142
FERNS AND FLOWERS: DR. ROWLANDS	143
ASPLENIUM ADULTERINUM: P. GREENFIELD	146
SWISS FERNS AND FLOWERS: E. A. ELLIOT	147
ASPLENIUM VIRIDE: P. GREENFIELD	150
SOUTHPORT SHOW, 1955	152
FERN GOSSIP	153

EDITORIAL

A new edition (the third) has been published of Messrs. Hyde & Wade's "Welsh Ferns": in the Preface to this it is stated "For this edition the authors have made only a few changes, prompted in the main by the writings of Professor Irene Manton." Apart from the importance of these, the book is considered, on high authority, the best now extant on our Ferns; and we commend it again as one that all who are interested in Ferns should possess.

The University of London has a number of University Extension Courses planned, some of which begin in January, 1956. Information as to these, and, for future reference, as to others held or begun in the autumn, can be had from the Deputy Director (Extension), Department of Extra-mural Studies, University of London, Senate House, W.C.1.

At the time of writing, no decision on the place for the 1956 Excursion has been made. Members will, however, be given notice of this in good time to make their arrangements for joining it.

Unless any alteration becomes necessary, the Annual General Meeting will be held on the Thursday in Chelsea Show week, at the British Museum (Natural History), Cromwell Road, London, at 3.0 p.m. Members are asked to note this now, in case no further notice is given.

The Treasurer hopes that any outstanding subscriptions, due on July 1st last, may be sent to him without delay. His

DEC 28 1955

DEC 28 1955

address is on the cover of the *Gazette*. In support of this, it can be said that most of our annual losses are due to non-payment, and the inevitable erasure of names from our Membership list.

None the less, our numbers continue to be satisfactory, and we welcome as new members the following:—Mr. W. C. Buchanan, Douglas Bank, Drumchapel Road, Bearsden, Dumbartonshire; Mr. T. A. Dyer, Rockfield, Alrewas, Staffs.; Mr. J. S. L. Gilmour, M.A., F.L.S., University Botanic Garden, Cambridge; Mrs. A. M. Tinne, Lochwood Cottage, Glasgow; Miss D. M. White, Birch Cottage, Walnfawr, near Caernarvon, N. Wales.

The next issue of the *Gazette* will be due in September; but it may be a little later, in order to include an account of the Excursion, which otherwise would be delayed until June, 1957. The article on Ferns and Flowers is a reprint by Dr. Rowland's kind permission, of one originally published in Vol. V, No. 3 (May, 1924) of the *Gazette*.

E.A.E.

OBITUARY

We record with regret the death of one of our oldest Members, since 1921, W. R. Sherrin, in March, 1955, in his 84th year.

From 1895 till 1919 he was on the Zoological Staff of the British Museum (Natural History), and continued part-time work there after his appointment in 1919 as Curator of the South London Botanical Institute. He retired in 1947. He was specially interested in Mosses, and wrote and illustrated two books on them: in 1945/46 he was President of the Bryological Society.

His other interests included Taxidermy, book-binding, lantern slide making.

In 1919 he was made an Associate of the Linnæan Society (*honoris causa*) and was an Honorary Life Fellow of the Zoological Society. The South London Botanical Institute, as it now is, was due to his energy, helped by his daughter, who, with his wife and son, survives him.

THE ANNUAL MEETING, 1955

The 52nd Annual Meeting was held preceded by a Committee Meeting at 2.30 p.m.. Both were held in the Board Room of the British Museum (Natural History), by kind permission of the Trustees.

Members present at both were Mr. A. H. G. Alston (Chairman), Mr. Dyce, Mr. P. Greenfield, Dr. Swinscow and the Hon. Secretary.

At the Annual Meeting, the usual business was transacted, and the elections carried out: Mr. Alston being unanimously re-elected as President.

The Vice-Presidents and the Committee were re-elected en bloc; and the Treasurer, Editor and Secretary, and Auditor.

The President asked for the Secretary's Report, which follows.

SECRETARY'S ANNUAL REPORT

The past year can be considered a very satisfactory one as regards our special interests. Even the wet weather in the summer did no harm to ferns, and the long winter, as far as one knows, caused comparatively few losses and some delay in spring's fresh growth.

In July, Mr. P. Greenfield and I met Mr. H. G. Rugg, at Wisley, where the ferns and many other plants were enjoyed in spite of much rain.

The Lake District excursion included all three of us and a number of other members and visitors: this has been ably reported in the *Gazette*, and it can be noted here as most enjoyable.

Special mention must be made of the President's expedition to Indonesia, which occupied just over a year from start to his return: of which he has given an account, also in the *Gazette*.

After the Borrowdale visit, during which all members had the pleasure of inspecting Mr. Askew's Nursery and Mr. Jackson's garden, Mr. Robinson, of Preston, and your Secretary did some hunting in the area round Preston, and paid a visit to Mr. Kaye.

Our other fern-grower members, Mrs. Healey and Messrs. Perry, have also been visited by the Secretary: all these proved most interesting, as well as a call on Mrs. Macsel last June, when it was a very great pleasure to see her success in maintaining her husband's collection.

On the more scientific side, mention should be made of the discovery at Brackwell by Mrs. Healey of the hybrid between *Dryopteris dilatata* and *D. spinulosa*, and her rescue of the colony from extinction.

Some members of the Botanical Society of the British Isles have been paying special attention to ferns, and we are happy to welcome a few of them as our Members.

Dr. Swinscow and Mr. Greenfield each, separately, made excursions and there have been other individual ones.

It can therefore be said that our activities are not only maintained but are increasing, and widening in scope.

Since our last annual meeting, we have lost Mr. W. R. Sherrin, who died in March ; and others, it is believed but not definitely known, in the same way.

One member has resigned; there are twelve names for election today.

This Report was accepted, and the following new members were formally elected: — B. R. Allison, M.D., Hewlett, Long Island, New Jersey; Mrs. E. M. Arksey, 44, Kingfield Road, Sheffield; Mrs. M. C. L. Bassnett, Laund, Hesketh Lane, Tarleton; R. C. Benedict, Ph.D., Pilot Knob, New York; J. A. Crabbe, British Museum (Natural History); Miss J. E. Harvey, 23, Captains Road, Edinburgh; W. D. Hincks, D.Sc., 19, Whitefield, Heaton Norris; J. D. Lovis, B.Sc., Department of Botany, Leeds University; Mrs. J. G. Neilson, 5, Lady Road, Edinburgh, Perry's Hardy Plant Farm, Enfield, Middlesex; P. H. B. O. Smithers, V.R.D., D.Phil., M.P., Colebrook House, Winchester; S. Walker, D.Sc., Hartley Botanical Laboratories, Liverpool University.

After this, the Treasurer presented a statement, to that date, of the accounts, and said the financial position was satisfactory, but would be improved if all members paid their subscriptions on the date when these are due, July 1st.

It was not yet possible to issue the *Gazette* more often, and the time for this was not in sight, though hoped for.

He referred briefly to the various items, and the Statement was then accepted, the President thanking Mr. Dyce for his continued care and attention to our finances.

**INTERIM FINANCIAL STATEMENT as at
26th MAY, 1955**

1954		£	s.	d.
30th June				
To Balance ...	...	45	11	1
Subscriptions ...	...	36	5	0
Donations ...	...	2	7	3
Sale of "Gazettes" ...	...	4	14	0
Sale of Plants at Southport ...	...	3	0	0
		£91	17	4

	£	s.	d.
“ Gazette ”	32	10	6
Block for “ Gazette ”	2	12	6
Printing expenses ...	1	11	9
Subscription, R.H.S	2	2	0
Hire of room for Aug./54 Meeting		10	0
Postages and Inci- dental Expenses—			
Treasurer	2	10	0
Balance	50	0	7
	<hr/>		
	£91	17	4

1955			
26th May		£	s. d.
To Balance ...	...	50	0 7

The Secretary was asked to state that back numbers of the *Gazette* are available: Volumes VI, VII, at 6/- a volume, i.e. 6d. a number, plus postage.

A few copies of the numbers (1 to 5) so far issued of Vol. VIII are also available at 1/6 each.

The Society is always in need of earlier Volumes, I to V, or of any single numbers of these.

It was decided to hold the Annual Meeting at the same place, on the Thursday in Chelsea Show week, at 3.0 p.m.

North Wales was suggested as the place for the 1956 Excursion in the first half of September.

Mr. Dyce thought that photographs of well-known varieties, not hitherto illustrated in the *Gazette*, would be of general interest.

It was agreed that this would be so. The President said he was collecting dried specimens of fronds and would always be glad to receive any. He referred to two fern pests, of more or less recent appearance: these are, mites especially on greenhouse ferns, and Sawfly larva on *Athyrium* stems, the latter's presence being known by bubbles like Cuckoo-spit, on the lower part of the stems.

Any information on these would be welcomed.

The meeting closed with a vote of thanks, unanimously endorsed, to the Chairman.

A balance sheet at the end of our financial year was later drawn up by Mr. Dyce, and is appended here.

FINANCIAL STATEMENT at 30th JUNE, 1955.

1954	£	s.	d.		£	s.	d.
30th June				"Gazette"	25	10	6
To Balance	45	11	1	Block for "Gazette" ...	2	12	6
Subscriptions	39	5	0	Printing expenses ...	1	11	9
Donations	2	7	3	Subscription, R.H.S ...	2	2	0
Sale of "Gazettes" ...	4	14	0	Hire of room for			
Sale of Plants at				Aug./54 Meeting	10	0	
Southport	3	0	0	Cheque Book	5	0	
				Postages and Inci-			
				dental Expenses—			
				Treasurer	2	10	0
				Balance	59	15	7
	£94	17	4		£94	17	4
1955	£	s.	d.				
30th June							
To Balance	59	15	7				

THE KENDAL EXCURSION, 1955

On the 27th August, 1955, five of our members from London, Warlingham and Preston foregathered at the Woolpack Inn at Kendal, the original home of the Society, to

enjoy a week's fern hunting. We were joined on the Monday by a visitor from the U.S.A., Mrs. Fern Ward Crane, who is over here in connection with her researches on the affinities of certain American and British ferns, and was introduced to us by Professor Manton, of Leeds University, with whom she is collaborating. We were very pleased to welcome Mrs. Crane, and to have been of some assistance to her.

Mr. P. Greenfield reached Kendal a few days ahead of the others and did some preliminary exploring of likely areas for hunting. We were in very different country from last year, when all our activities were concentrated in the one valley—Borrowdale. At Kendal our hunting grounds were widely scattered in different directions from our centre, and necessitated the use of car and bus to get out party to the selected places, most of which were on the limestone. Our search was chiefly for the lime-loving ferns which predominate in this district.

A glance through the old records of the finds made in the surrounding country makes it very evident why Kendal was the birthplace of our Society. The fern varieties were there to find, and the hunters were there to find them. It would seem, however, that the heyday of hunting in this area was during the 30 years prior to the formation of the Society in 1891, and the long list of ferns found during this period, which enrich our collections to-day, include such treasures as *Polypodium vulgare pulcherrimum* from Whitbarrow, *P. v. cambricum barrowii* from Witherslack, and *P. v. cambicum hadwinii* from Silverdale.

Have the old hunters cleaned up all the good varieties in these hunting grounds? This question is often discussed by us, and true it is that, in spite of assiduous hunting, no first-rate varieties have been found for many years. This year was no exception, and our successes were minor ones—*Phyllitis scolopendrium multifidum*, *undulatum*, and some poor *marginatum*, a crested *Athyrium* and, of more interest, *Dryopteris villarsii cristata*, found by Mr. Greenfield on the limestone pavement on Hutton Roof. The plant was in an exposed position, and it is difficult to say if the creasing is thorough at all the tips. The finder gave me a crown and we are hoping that the promise of this plant will be fulfilled in cultivation.

The limestone pavement on Hutton Roof is a most interesting formation. Extensive flat areas of limestone cover the hill, and are broken up by narrow fissures running in all directions. These "grikes," as they are called, are from a few inches to about 2 feet in width, and of varying depths up to and often exceeding 6 feet. The walls and bottoms are full of ferns, the predominant species being *Phyllitis scolopendrium*, *Dryopteris villarsii*, and *Gymnocarpium robertianum*.

These species are in great abundance, and we noted particularly the strong growth at the bottom of the grikes of *P. scolopendrium*, obviously very happy in the sheltered conditions and the good rich soil which accumulates there. It was slow work peering down the clefts in the search for variation, and careful footwork was called for, as a slip could easily result in a broken leg. The *P. scolopendrium* varieties we found were in shallow grikes, but the thought was constantly in our minds that if a really good variety was spotted, it would most likely be at the bottom of a narrow, deep fissure and beyond our reach.

The interest in Hutton Roof and the large extent of the area to be hunted was such that we devoted two days to this hill and enjoyed every minute of our stay there. Other ferns found in the grikes were *Asplenium trichomanes*, also very much at home in the prevailing conditions, *A. viride*, *A. rutamuraria*, *Polystichum aculeatum*, *Cystopteris fragilis*, and *Polypodium vulgare*. Some orchids and other plants of interest to our botanists were also growing among the ferns.

A day was spent in the Witherslack area, with *Polypodium* in mind, and several fine colonies along one part of our route were carefully scrutinised. No fronds showed any departure from the normal. Later our way led through a damp wood, where *Dryopteris dilatata* and *Athyrium filix-foemina* luxuriated. On the whole, we had a poor day's hunting, but we were able to cover only a little of the district, and further search would probably have revealed some good hunting ground. Lack of time prevented us from extending our search on Whitbarrow to more than the extreme S.W. corner, where *Ceterach officinarum* was seen, and *A. rutamuraria* on scree. On the way back to Kendal, *Polypodium* was common on the banks of the road between Sedgewick and Natland, but there was no variation.

Mrs. Crane's interest was more particularly in *Dryopteris*, and localities were visited where these were plentiful. One day was spent around the village of Kentmere, where *D. borreeri* was the main focus of interest. This was switched to *D. dilatata* in the afternoon, when pale-scaled specimens were found during our scrambling on the adjacent hills. Several plants were dug up during the day and were later sent on to Professor Manton at Leeds, and Mrs. Crane's plant-press began to bulge with a large collection of fronds. Her happiest day was when we found a large colony of *D. spinulosa*, and she considered that this in itself was worth the long journey from the U.S.A. Our week had all but gone with not a glimpse of this fern, which was one she was most anxious to see, so on the Friday we concentrated all our efforts on hunting it down, and were successful. The plant-press swelled enormously as a result. We were delighted to

find a fine specimen of *Osmunda regalis* flourishing among the *spinulosa* and *dilatata*.

After the long, dry summer, ferns in most places were a sorry sight and many looked quite dead. Wall ferns and those on roadside banks were the worst sufferers. The drought ended while we were at Kendale, and we had some heavy rain, but not enough to upset our programme. The worst storm was on Thursday afternoon when we visited Mr. R. Kaye's nursery at Silverdale. Some of us walked part of the way hunting en route, and arrived rather damp, while the others travelled in comfort by car. We were hospitably entertained by Mrs. Kaye after we had been shown round the nursery by Mr. Kaye, whose ferns, like those of most of us, have suffered badly this summer. In his orchid house, we were very interested to see that the compost in the pots was ideal for the propagation of ferns, and thousands of self-sown sporelings presented quite a weeding problem. Some good things have turned up amongst them, and Mr. Kaye proudly exhibited to me a very fine specimen of *P. scolopendrium laceratum* which originated in this way. I am now the owner of a sporeling from this plant, and it shows promise of being as magnificent as its parent.

During the Excursion, some of our happiest hours were when, the day's hunting over and a good dinner disposed of, we gathered together for our evening meeting. The events of the day were discussed, the following day's programme planned, and then the talk ranged over a variety of subjects, but chiefly pteridological in botanical. Mrs. Crane's contribution to our discussions was a valuable one, and we prevailed upon her one evening to give us a short lecture on her work on spore-morphology as a means of identification in the genus *Dryopteris*. We were shown a series of her own line-drawings, which demonstrated very forcibly the spore-differences between species, polyploids, and hybrids, an aid to identification which is particularly significant among units which seem otherwise morphologically indistinguishable. We listened with the greatest interest and bombarded her with questions afterwards.

To sum up, we had a good meeting, good hunting, and a happy time together. Twenty-two species of ferns were recorded, but no exciting new varieties were found. We have all returned with some interesting plants, however, and some new fern knowledge, and our only regret is that so few members turned up to participate in what should be *the* big annual event of the British Pteridological Society.

I conclude with grateful acknowledgment for the help given by Messrs. J. A. Crabbe and P. Greenfield in the writing of this article.

J. W. DYCE.

FERNS IN BASKETS

Most of the ferns that grow on rocks or walls are rather difficult to establish in flowerpots. The outstanding exception is *Asplenium marinum*. In a greenhouse from which frost is excluded it will grow in a pot to a far greater size than among the coastal rock clefts that are its usual habitat in Britain. But the other Spleenworts seem rather to resent being planted in pots, and a botanist recently mentioned to me that in his laboratory they find *Asplenium viride* impossible to keep in a healthy state. As I have had some success in growing these ferns in wire baskets, I thought a note on the method might be of interest not only to those members of the Society who, like me, grow them for pleasure in their greenhouses, but also to botanists and others who require a constant supply for scientific study.

The wire baskets that I buy are of the usual horticultural pattern and the cheapest I can find. The best variety consist mainly of a thick wire wound spirally into the shape of a bowl, with three wires leading from the top edge to meet at a wire hook, from which the whole is suspended. When bought, the baskets are too large for my purpose, so I cut them down with wire clippers to about half size. I then line them with moss, my favourite being the common woodland moss *Mnium hornum*. It can be sliced off the woodland floor with thin sheets of the soil in which it grows. The advantage of taking this moss in slices of soil is that it will continue to grow and remain fresh throughout the year. The compost in which I put the ferns is made up of about equal parts of loam, sterile peat (or sometimes leafmould), and sand. For lime-loving ferns I add some limestone chips; or the fern may be planted between small nuggets of limestone knocked off a rock of it.

In order to water these baskets I have constructed an exceedingly simple framework over the water-tank in my greenhouse (I am no handyman). It is a broad shelf on legs, supported about 2 ft. above the top of the tank. Ferns in pots stand on it, and some hooks are screwed into its under-surface. I dip the baskets in the tank, and then hang them on the hooks to drain into it for a few hours, perhaps overnight. Rainwater, a precious commodity in Hertfordshire, is thus conserved.

The ferns I grow in this way are *Asplenium septentrionale*, *A. viride*, *A. trichomanes* in three varieties. *A. obovatum*, *Ceterach officinarum*, *Cystopteris dickieana*, and *Polypodium vulgare* in four varieties. That they grow with exuberance several members of the Society can testify, having seen them at the last annual meeting. That they grow better in baskets than in pots I have learnt by trial, since several

of them spent a year or two in pots, where they languished, before being put into baskets, where they raced ahead. I have also been able to compare the results of growing two equal parts of the same clump of *Cystopteris dickieana*, one in a pot and the other in a basket. The vigour of the basket-grown plant greatly outshines that of the pot-grown. The same result was noted in two plants of *Asplenium viride*, one kept in a pot, the other transferred to a basket. The latter's fronds are about 6 in. long. Indeed so striking is the growth of the basket-grown plants that they seem on the average to be about twice the size of their pot-grown relatives, though as a result of giving various plants away, or of transferring all of some species to baskets, I have not sufficient material with which to compare actual measurements.

DOUGLAS SWINSCOW.

THE WISLEY MEETING

This was held, as arranged, on August 13th, and six members were present, also Mrs. Dyce and a friend, the members being Mr. Crabbe, Mr. Duffy, Mr. Dyce, the Revd. E. A. Elliot, Mr. P. Greenfield and Mr. N. Robinson. The latter made a special journey by night train, an example of North Country keenness. From about 2.0 p.m. the Fern collection was being given a scrutiny, which became intensified when all the company had arrived.

As a whole, the Ferns were in good condition considering the dry summer, this being largely due no doubt to the water supply provided for them, and to the surrounding shade.

A number of gaps were noticed, where Ferns had died, or failed to grow properly.

In other cases, seedling Ferns had sprung up and, even when varietal, were threatening the welfare of more valuable plants by too close proximity to the latter. Here and there, too, labels have become misplaced, or have disappeared and in a few instances, some weeds were becoming too evident.

The larger ferns, such as *Polystichums*, *Dryopteris*, *Athyrium*, and the bigger *Phyllitis*, are well spaced and therefore not crowded, but some of the more vigorous *Polypodies*, with travelling rootstocks, would perhaps benefit by replanting.

This would be not only to their benefit but also to that of small Ferns of various species, which appear to be in some danger of being smothered.

In the *Athyriums*, there are a number of normal, non-varietal, plants which are no doubt self-sown, and with these, a clearance of many could very profitably be made.

The collection is so large that, while some of the foregoing comments are made after a more or less superficial inspection, others only become evident when a much more detailed and close examination has been given to the plants.

What has been said, however, may perhaps be suggestive of the kind of attention called for in even quite a small Fernery: for that at Wisley is not merely a collection but an example of how the best Ferns should be grown and cared for.

It may be remarked, in conclusion, that the Stansfield-Cranfield collections, which form the bulk of the plants, are almost entirely of genera with pronounced varietal tendencies, i.e. *Athyrium*, *Dryopteris*, *Polystichum*, *Polypodium*, *Phyllitis*. One would like to see space given to other woodland and water-side species, in a more prominent way: and some provision also made for display to catch the public's eye, of rock and wall growing species and such varieties as they afford.

Although so many Ferns need shade, and some protection from wind, it is not necessary to put them away in corners; sometimes, one feels, the old idea still persists that they are useful to fill spaces that would otherwise remain empty.

Some day, perhaps, a real collection of British Ferns and varieties will be made in a way that will give them the widest possible attention that they deserve.

E.A.E.

FERNS AND FLOWERS

The ultra-specialist in any branch of gardening is apt to be a tiresome person to the outsider. He is too inclined to fill all his available space with his speciality, to his own edification perhaps, but in a way that is boring to other people. The keen rosarian, for instance, may fill his garden with roses and refuse to grow anything in between the trees. He will probably be apologetic when you notice the edging of violas or crocuses unwillingly planted at his wife's command. The fern enthusiast, too, I think, is a little inclined to fill his ground to the exclusion of everything else. But in spite of the wonderful diversity of form and size among our British ferns, and in spite of the fact that so many of them are beautiful the whole year round, I think the interest of an outdoor collection can be considerably increased by a judicious sprinkling of flowering plants. Ferns do not grow in nature in serried ranks, with bare patches of earth in between. In their natural haunts they are found in association with various wild flowers, and are not thought any the

less attractive because of it. In the hedgerows they jostle with Herb Robert and speedwell, with primrose, buttercup, and stitchwort. Even the wall-loving spleenworts have to rub shoulders with stone crop and pellitory, while in shady dells their root-stocks are often smothered in moss.

The enthusiast will, of course, consider carefully what he will allow to mix with his treasures. His first consideration will be to note what will flourish in such situations as are congenial to ferns. The flowers must be willing to grow and bloom in somewhat shady places and in fairly moist soil, besides which they must never be too obtrusive or in anyway a nuisance. The cultivator will thus dispense with periwinkle, St. John's Wort and such-like except for the roughest corners. The foliage must not compete with that of the ferns for light or space, and the flowers should preferably come when the ferns are past their best. Nor must the plants be possessed of too vigorous a root system, lest they deprive their neighbours of the necessary food and moisture.

The choice of suitable flowering plants is large, especially for the amateur with a small garden, who has to spread his collection beyond the strict limits of shade and into the sunnier parts. He has ample choice of bordering plants, should he desire such, and may choose violettas, dwarf campanulas, mossy saxifrages and many other things.

Among flowering plants for filling in odd spaces between the ferns themselves, few seem more suitable than the hardy *Cyclamen*, such as *C. coum* and *repandum* which bloom before the deciduous ferns have uncurled their new fronds, or *C. europeum* and *neapolitanum* which come along when the first glorious greenery of the ferns is on the wane. These cyclamen, I think, associate particularly well with the harts' tongues, for both like a well drained soil not deficient in lime. For other spots, also well drained and not too shady, there are several of the *Crocus* species, beautiful and uncommon, which are worth trying even among the choicest ferns. *Crocus zonatus*, *medius*, *speciosus* and *longiflorus* suggest themselves for the autumn, with *C. Sieberi*, *biflorus* *Tomasinanus* and many others for the spring. The lesser *Narcissi*, such as *triandrus*, *cyclamineus* and *bulbocodium* are all very choice and associate especially well with the smaller ferns on rockwork. Other bulbous and tuberous plants can be had in plenty, and the *Anemones*, such as *blanda*, *apennina* and *nemorosa* (in several varieties) call for special mention, as being beautiful, good natured and disappearing early. *Trillium grandiflorum* and *Sanguinaria canadensis* are two more, while mere mention will suffice in the case of *Adonis*, *Eranthis*, *Galanthus*, *Scilla*, *Muscari* and *Leucojum*. The old-fashioned Lily of the Valley enjoys the company of ferns, but is apt when happy to become a weed.

Fritillaria meleagris, however, may hang its head, though not in shame, among your choicest shield ferns. No attempt at massing will be made in the fern border, a few flowers peeping out here and there in odd places being probably better, and detracting less from the main occupants of the beds. Here and there, a larger plant may be allowed, such as a clump of Christmas rose, a patch of *Anemone hepatica*, *Dodecatheon meadia*, or *Dicentra spectabilis*, *Mimulus* is somewhat too rampant, but *Mazus pumilio* is of a quieter habit. In the damper parts, too, such things as *Iris cristata* and *gracilipes*, *Cypripedium calceolus* and even some of the Gentians might be tried, while the height of enthusiasm will be reached when *Calochorti* of the *Globe* section are attempted in beds of leaf mould.

A host of other suitable things could be mentioned, but the object of this article is to give a few suggestions and not an exhaustive list. Some discretion must of course be used in placing whatever flowers we have decided upon, so that such moisture-loving things as the *Primulas* shall not be planted in the drier parts among the good-tempered male and shield ferns, nor such sun-loving plants as the Crocuses placed in the shadiest corners with the lady ferns. And this point will be conceded—only the choicest flowers among choice ferns: which statement can be supplemented by another, that, on the whole, the so-called florists' flowers are out of place in the fern border, the natural species being altogether more suitable.

The above arrangement certainly adds to the interest of the visitor, who may never have heard of Moly, Jones, or Fox, and yet who might be persuaded to examine some fine ferns after having been attracted to the spot by a clump of *Epimedium* or a patch of *Primula rosea* in its full glory. Besides, it enables the fern lover with limited space to indulge his fancy in flowers without endangering the supremacy of his particular pets.

In conclusion, one might mention the question of carpeting. In nature, there is no doubt that the general plant association of wood and hedgerow tends to keep the roots cool, and in some cases to conserve moisture, but we do not want our choice ferns smothered and strangled by a rampant creeper. In an old volume of *The Gazette* it is suggested that the "Corsican nettle" (*Helxine Soleirolii*) might be used, but I imagine that this is too hearty a grower, at least for the less robust ferns, besides being doubtfully hardy. I am at present allowing *Mentha Requienii* and *Arenaria Balearica* to ramp over a small bed of mixed ferns, and am watching with interest for the result. I may be sorry for it later, but so far the apparent result is not bad. At any rate, nothing more suitable as a carpenter comes to mind, unless the dainty

little annual *Ionopsidium acaule* can be called one. Perhaps someone in whose garden the *Arenaria* more especially is a weed, will give his experiences as to the fate of the ferns when the carpenter has taken possession and become thoroughly established.

S. P. ROWLANDS.

ASPLENIUM ADULTERINUM

This fern is almost certainly a hybrid between *A. viride* and *A. trichomanes* (probably the form — diploid — of *A. trichomanes* which hybridizes with *A. septentrionale*— see Editorial note, page 123 of the *Gazette*, Vol. VIII, No. 5).

A. adulterinum resembles *A. viride* rather than *A. trichomanes* in the texture of its fronds and in the absence of any wing to the rachis, which is brown or black (like that of *A. trichomanes*) in its lower part, shading into green above. It occurs on serpentine rocks on the continent of Europe ; and Mr. J. D. Lovis, for whom the Society has been asked to collect specimens of *A. trichomanes* in certain circumstances (*Gazette* reference above) would be grateful if members would examine serpentine rocks in Scotland in the hope that *A. adulterinum* may be found on them. According to Geikie's Text Book of Geology, serpentine occurs in two distinct forms: first, in beds or indefinitely-shaped bosses, intercalated among schistose rocks, and associated especially with crystalline limestones ; second, in dykes or veins traversing other rocks. Banffshire is mentioned as one locality in which serpentine is found interbedded among other rocks, including limestones.

We have recently had a most welcome increase in the number of members in Scotland, and hope that this quest may appeal specially to them, as well as to any other botanists or fern-hunters who may be able to operate in Scotland. The matter is rather intriguing, as one purpose of the search for *A. trichomanes* asked for in connection with *A. septentrionale* and its hybrid *A. x breynii* is to ascertain whether the *A. trichomanes* within range and likely to be one of the parents of the hybrid is growing on lime-less rocks. If *A. adulterinum* could be found in Scotland (in which case, of course, it should be left *in situ*) it would be important to ascertain whether *A. trichomanes* near it is or is not on calcareous rocks.

Possibly in the course of a search for *A. adulterinum* in Scotland, it might be of interest at the same time to look for the variety of *Asplenium adiantum-nigrum*, known as *obtusum* or *serpentinum*, which, according to Britten's "European Ferns," was found in 1862 in the parish of Cabrach on the serpentine range of mountains which divides the counties of

Banff and Aberdeen. This variety is described as being the opposite of *acutum*, having comparatively straight, spreading pinnae which are usually more or less obtuse at the apex. It is of a dull, opaque green. Apparently, however, it is somewhat variable in appearance, occasionally bearing more resemblance to *A. adiantum - nigrum* proper.

P. GREENFIELD.

SOME SWISS FLOWERS AND FERNS

It would be easy to fill the whole *Gazette* with an account of my first visit to Switzerland: but other contributors must, very gratefully, be considered, and so I begin with June 2nd, when at 6.30 a.m. I had my first sight of the country at Lausanne, with the famous Dent du Midi mountain standing out clearly in the brilliant sunshine. I was one of a Botanical party of 24 which included as leaders our member, Mr. J. S. L. Gilmour, and Mrs. Gilmour. Two more came two days later. Our destination, St. Luc, at an altitude of 5,390 feet, was reached just after 11.0 a.m., and we were warmly welcomed at our most comfortable hotel, the H. du Cervin.

Soon after, we were all out, quietly exploring the village and its immediate surroundings. Next morning we were taken for a leisurely walk with a sloping ascent of some 100 feet, and for about $1\frac{1}{2}$ miles or so: while sitting in a meadow, I was called to come higher up the slope, and found that *Botrychium lunaria* had been discovered in abundance. They were in a damper situation than one would expect, and very stout fleshy plants.

Here it may be remarked that in nearly all the Swiss specimens of flowers and ferns, there was some difference between them and British examples where they occur in our country: a difference not always easy to put into words, but quite appreciable.

Most of our party had only a general interest in ferns, but all were very thoughtful in remembering my specializing and in bringing back fronds or whole plants from excursions which we were free to make in all directions. Almost every day a big walk was planned and joined in by about half our total number: others rambling alone or in small groups.

This naturally resulted in a maximum collection of plant species, the total at the end being over 300.

Usually we went upwards, some of us reaching over 9,000 feet, and nearly all getting above the tree line and into snow. My own highest climb was to just over 7,000 feet: the most tiring walk I did was to go downwards, and then to take the main road back.

Two big excursions, neither of which I went in, were to Zermatt, and to Les Follaterres near Martigny. I regretted

missing the latter as, contrary to expectation, a host of very interesting plants were found.

However, we all saw the finds, as they were set out on the verandah on tables, in jars and tins which the Hotel seemed able to produce in unlimited quantity: the naming being carried out by Mr. Gilmour and others with ungrudging skill and expenditure of time.

On June 10th, the Abbé Mariétan came from Sion to stay a night, and lead a ramble next morning. He is a leading authority on everything connected with the Canton Valais, and though announcing the walk as "mainly geological," it became one of much wider interest.

There were geologists in our party, thanks to whom it was shown that we were at the junction of Limestone formation with Gneiss, Mica schist, and Granite. This resulted in a very varied flora; and the Fauna were also interesting to many of us. Snow fell on three or four nights and there were several cold evenings: on one walk, deep drifts across the track on the mountain side, with a sheer drop at a steep angle below the track, gave us a taste of the mountaineer's traverse. The way across was made for us by one of the party, with Himalayan experience, stamping out foot-holds close together, so that we shuffled rather than strode across.

Owing to the late snows, the cattle, a heavy-bodied short-legged more or less mahogany-coloured breed known as the Héreas race, were not yet loose on the mountain meadows: so we missed hearing the celebrated yodelling song "Ranz des vaches," used to call them together by their owners.

We were too early also for the Fête des Vignerons or Vinegrowers' Festival, only held at long intervals and due this year early in August.

But we were on the spot for the great Roman Catholic Feast of Corpus Christi on June 9th, observed with tremendous enthusiasm and deep impressiveness.

In the Val d'Anniviers and elsewhere in the Valais, tradition is extremely strong, and we saw some magnificent old-time costumes in the Procession which was the climax of the Feast.

The day is made a general holiday and it was very bad luck that the afternoon was one of the wettest we had.

On the 14th, I went down to Lausanne and spent next day with our member, Monsieur P. Villaret, whom I was delighted to meet after considerable correspondence. His itinerary, carefully planned to include all the plant stations of greatest interest, covered a tour of some 90 miles in his car on a brilliantly sunny day: and added a number of plants to the party's list, including some from just below Salvan, where Mr. P. Greenfield stayed in 1929 and graphically described in the *Gazette*, Vol. V, No. 11.

After seeing a good deal of Lausanne next day and visiting friends who live there, I rejoined the party on the through train at 10.50 p.m. and we were in London on the 17th at 4.15 p.m.

Of the flowering plants, the outstanding species, to me were the huge *Anemone alpina* and its variety *sulfurea*, and *Gentiana verna*, on open grassy stony slopes, often mixed with the lovely white *Ranunculus pyrenaicus*, a fairly tall plant in native surroundings, *Crocus albiflorus* sometimes occurred with these. *Soldanella alpina* was seen, as expected, pushing up through snow, but appeared to be more abundant lower down, where *Trollius* also flourished in snow-free meadows, with the curious *Phyteuma orbiculare*. Of seven *Veronica* species, *aphylla* and *Teucrium* were non-British: as was *Viola biflora* out of six species. When growing wild, *Polygala chamaebuxus* arrests the eye at once, being for one thing frequently at about that level: and the intensely deep blue of *P. alpina* does the same for an otherwise rather insignificant little plant. Seven orchideous species contained one non-British, *O. sambucina*, *Rhododendron ferrugineum* was abundant but hardly in flower: nor was *Sambucus racemosus*, the elder with red berries. Besides Cowslips, *Primula hirsuta* and *P. farinosa* made, as they always do, a lovely show: the former especially when clothing a rock top or fringing an overhanging ledge. It was too late for *Saxifraga oppositifolia*, though one plant was found: *S. aizoon*, *S. cuneifolia* and *S. moschata* were brought in.

At this level, 5,000 feet and above, it seemed too early for most Ferns to show new growth, though *Thelypteris dryopteris* (Oak Fern) was well developed and *Dryopteris filix-mas* (Male Fern) was doing so rapidly. *Polystichum lonchitis* fronds of last year protruded from under rocks in several places and the common Polypody (*P. vulgare*) was seen fairly often on rock tops or ledges or in crannies. *Cystopteris fragilis* was very common, varying only in size. *Asplenium septentrionale* and *A. Trichomanes* were abundant, often close together, but with no trace of their hybrid *x Breynii*. *Dryopteris* (*Lastrea*) *dilatata* and *D. spinulosa* were recorded but were very scanty, and only one patch, a fair-sized colony, was seen of *Thelypteris Robertiana*, the Lime-stone Polypody: and a small amount of *Asplenium viride* occurred, at about 8,000 feet; while *Botrychium*, already mentioned, was thick on the ground at about 9,000 feet.

At the much lower level of Les Follaterres, out of some 45 plants recorded as distinct from the main list, the most interesting appear to be *Aceras anthropophora* and *Cephalanthera rubra*: *Linum tenuifolium*: *Astragalus onobrychis*: *Alyssoides utriculatum*: *Onobrychis arenaria*: *Allium*

sphaerocephalum: *Silene Armeria*: and in Canton Valais, *Vicia onobrycioides*.

Two ferns were recorded: *Ceterach*, and *Asplenium adiantum-nigrum*, a form very unlike our normal type.

At the various places selected by Monsieur Villaret for the 15th, a number of flowers were noted, from which I select *Trifolium alpestre*, *Genista sagittalis*, *Silene rupestris*, *Veronica fruticans*, *Anthericum Liliago*, and the very beautiful white form of *Verbascum Lychnitis*.

It was however a day primarily devoted to Ferns, and I was privileged to see *Athyrium filix-femina*: *Asplenium ruta-muraria*: *Blechnum spicant*: *Dryopteris Oreopteris*: *Asplenium fontanum*: *A. x Breynii*: *Cystopteris montana*: *Polystichum setiferum*, in a new station recently discovered by Monsieur Villaret: and two rare hybrids, *Dryopteris Tavelli* (*D. filix-mas* x *D. Borreri*) and *Polystichum Bicknelli* (*P. setiferum* x *P. lobatum*). The final exhibit of a most memorable day was a patch of Lycopods, where *Lycopodium annotinum*, *L. clavatum* and *L. complanatum* grew intermingled in some profusion and contentment.

Out of all this botanical wealth I chose *Ceterach*, *Asplenium viride* and *A. septentrionale*, *Polystichum Lonchitis*, *Sedum dasyphyllum* and *Sempervivums arachnoideum* and *tectorum*: and, with an Import Licence, got all of them safely home, where they are now flourishing in a most satisfactory way.

E. A. ELLIOT.

ASPLENIUM VIRIDE and A. TRICHOMANES

Asplenium viride is not a fern for the hunter of varieties, of which it has very few: interest in it lies rather in its restricted habitats and some difficulty in cultivating it. In this country it is a mountain, or at least an upland, fern and needs calcareous conditions. Its need for lime has sometimes been challenged but does not appear to have been disproved.

In the Derbyshire limestone area, *A. viride* occurs in a few places growing in cracks on north-facing rocks protruding from the sides of the deep dales, which, as along the valley of the Wye, break up the general undulating limestone plateau. At one of its habitats botanical friends of the writer had observed with some astonishment that plants preferring acid soil, such as heather (*Calluna vulgaris*) were growing near the fern; and precisely the same state of affairs has been found to obtain in another dale where a rather large colony of the fern is spread out along a line of rocks almost overhung by the edge of a field sloping down to them from above—an ordinary pasture of the limestone plateau. Clearly the leach-

ing of the soil over the rocks had removed the lime from it. On these rocks where they were decorated by *A. viride* there was no *A. trichomanes*. It was only where *A. viride* was petering out that a very few plants of *A. trichomanes* were seen. When this odd dissociation of the two ferns was mentioned to Mr. F. T. Hall, who has a very wide knowledge of the flora of the Derbyshire dales, he stated that he had noticed the dissociation generally. And Druery remarks somewhere in a more general way that *A. viride* is not usually found associated with *A. trichomanes*.

What is the explanation? Subject to confirmation by Mr. Lovis who has examined *A. trichomanes* from the dale referred to, it may be assumed to be the common form — tetraploid. As usual therefore it would have a preference for lime, but it would be more tolerant of its absence than is *A. viride*. The Derbyshire experience suggests, however, that it dislikes moisture from leached soil while, surprisingly *A. viride* seems tolerant of it so long as the fern is growing in limestone.

In the limestone areas of Yorkshire and north Lancashire *A. viride* is found usually, though often sparsely, in the "grikes" of level stretches known as pavements. "Grikes" — a term scarcely known outside this region — are crevasses, generally a few inches to a foot or so wide and a varying number of feet deep. They are as a rule close together and caution is needed in exploring them to avoid a slip. Occasionally, small bushes and a little herbage may grow on the surface and probably their decay accounts for the soil in the grikes which becomes leached and often so fine in texture and black that it is almost as difficult to remove from the hands as soot.

The haunts of *A. viride* in Derbyshire are at an altitude of about 800 ft. The limestone pavements in N. Lancashire are at approximately the same height. A pavement at Ribbleshead is 1,100 ft. above sea level, and the pavements on the flanks of Ingleborough are higher.

The conditions of soil, shade and moisture on the Derbyshire rock-faces are less variable than those in the grikes, where in the irregularly waterworn limestone there are cracks, pockets and loose pieces of rock which can hold soil, much or little, with differing exposures. There is a surprising variety in the vegetation. Taking the more interesting of the N. Lancashire pavements as an example, there are bushes, herbage, flowering plants, and ferns, mainly *Phyllitis scolopendrium*, *Dryopteris filix-mas*, *D. Villarsii* (*Lastrea rigida*), *Cystopteris fragilis*, the Limestone and Common Polypodies: *Polystichum aculeatum* here and there. Rather sparingly and localized are *Asplenium viride*, *A. trichomanes* and *A. rutamuraria*.

There is little limestone in the central parts of the Lake District; but *A. viride* has been found on slate formations in one or two places. It seems probable that its presence may be accounted for by calcareous veins in the rock. On this point further investigation is desirable, though it is likely to be very difficult to carry out.

It is hoped that members who have found *A. viride* elsewhere will be able to furnish full information about the habitats and surrounding vegetation.

P. GREENFIELD.

SOUTHPORT SHOW

(Contributed)

It is not often that summer weather is almost too good, but the intense heat at the end of August had some adverse effect, on plants and visitors, though rather too much was made of this in the daily Press.

There was some evidence of the prevailing dryness in the Hardy fern classes, but the number of exhibits was well maintained: and it is satisfactory also that there were nearly as many exhibitors as in recent years, though their number could well be increased with advantage. At present, about half a big tent is required; one would like to see the whole tent filled with ferns! Public interest was rather stronger this year and on one day the Bureau in the National Societies' tent was kept almost continually busy with questions and advice.

Special thanks are due to Mr. N. Robinson, who gave invaluable help on all three days, and to Mr. B. Hayhurst, who supported him ably during this time. In the big Group class there were again only two entries: Mr. J. Brookfield being first and taking our Challenge Cup; Messrs J. Brookfield and Son coming second.

The winning Group contained excellent *Polystichums*, *gracillimum* and *Iveryanum* in particular; and some fine *Polypodies* and plumose *Athyriums*; while in the others, *P. angulare* Bland, variegated *Scolopendriums* and a nice *A.f.f. Victoriae* were pre-eminent. It has been the custom to give results of the successful exhibits in detail, but this year the practice is altered and only plants of special merit (with the owner's name) are being mentioned.

Mr. B. Hayhurst's first prize exhibits included the uncommon *Polypody* Cowan's *grandiceps*: a fine crested *scolopendrium*: *Polystichums aculeatum gracillimum*, *angulare divisilobum densum* and *cristatum*: *A.f.f. percristatum plumosum* Druery: *Lastrea angustata crispum*. In his three second prize exhibits, the best *Polypodiums* *vulgare elegantissimum*, and *Barrowi*: Mr. J. Brookfield's firsts included:

P. vulgare elegantissimum: and *Barrowi*: and in second place, *A.f.f. plumosum* Horsfall, *Polystichum plumosum densum*, and a *lineare* *Lastrea*.

Mr. W. Law, now a truly veteran exhibitor whom one was pleased to find as enthusiastic as ever, secured a second prize with *A.f.f. plumosum* Druery and *A.f.f. dissectum*: and two third prizes.

Mr. J. Pye won the most contested class, that for one British fern, with *A.f.f. Victoriæ*: and one second and two third prizes. His *A.f.f. Frizellæ* (a crested fern) was the only specimen of this fern noticed in any exhibit. Finally, Mr. Scott took third prize, with a *Scolopendrium vulgare crispum*, in the one British fern class.

There were other competitors besides those named above; this was all to the good, as showing a real interest in fern culture.

A noticeable and most commendable point, which one would like to see still further extended, was that a number of varieties were shown which had not appeared as exhibits in recent years. In other words, variety in varieties from year to year is most desirable.

Almost all the faults in exhibiting, referred to in Vol. VIII, No. 5, were in evidence, and in some cases cost the exhibitor the loss of a higher place which would otherwise have been secured.

In "John Bull" for August 28th, 1955, an excellent article on the Show appeared, with some colour photos; these included one of the Show Secretary, Mr. G. Nicholls, and the Show-ground Manager, Mr. E. Patrick, two officials to whom most of the Show's success is due and to whom the exhibitors and judges owe thanks which are as real as they are difficult to put into words.

FERN GOSSIP

For some reason, which I find hard to explain to myself, and should welcome opinions on, there has been an outbreak of self-sown spores in my cold greenhouse during the past twelve months.

Asplenium Trichomanes, *Athyrium*, *Cystopteris semper-virens*, *Dryopteris*, and perhaps others, have appeared, in some cases abundantly. This has never happened so freely before, and it is this which puzzles me. The strangest is the emergence of an exotic *Pteris*: the probable parent plant was given away at least two years ago.

In the September issue of the Botanical Society of the British Isles' publication, *Watsonia*, Dr. S. Walker has the first part of a most interesting and thorough account of studies in the *Dryopteris dilatata* group. This is mentioned here only

as a reason for calling attention to two ferns, the other being *D. spinulosa*, which often suffer from neglect as regards cultivation. The third of the group, *D. cristata*, is a rarity and seldom seen ; but if found fertile, is easily raised from spores.

Certainly, none of them has been particularly varietal ; but all have a grace of their own which deserves more attention than it usually receives.

All the larger Holly Ferns (*Polystichum Lonchitis*) seen in Switzerland in June were growing embedded under large boulders, with only the fronds visible. An attempt to copy this during the winter, for the two brought back, may enable them to survive. At present, both seem very happy at about 120 feet above sea level instead of well over 5,000, in a bed of gritty alluvial soil outdoors. A former attempt to grow the fern under glass ended in failure, the fronds rotting away one by one: probably insufficient drainage, over-watering, and too high (for this fern) temperature, all led to this result.

Probable all our outdoor ferns, when watering could not be done, have suffered during this summer. It would be of interest, especially to me, to hear from any Members which of their ferns were most affected in this way. My worst victims were *Athyriums*, particularly some but not all of the plumose varieties—and *Cystopteris*.

A fern or, rather, part of one obtained as an offset from a huge old *Dryopteris dilatata* in Johnny Wood, Borrowdale, in 1954, is showing signs of interesting growth and possible hybridity. It has the characteristic *dilatata* frond and scales, but the rootstock appears to be beginning to creep in *spinulosa* fashion. One wonders, if it is a hybrid, whether the *spinulosa* influence is the stronger. At any rate, it will be worth watching now it has become quite established.

E.A.E.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to:

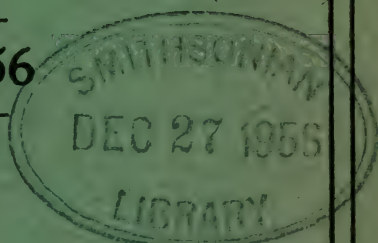
THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
VINCENT SQUARE, LONDON, S.W.1

B01249
VOL. VIII

No. 7

- The -
**British Fern
Gazette**

WINTER, 1956



EDITED BY

Revd. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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Loughton, Essex.*



Phyllitis scolopendrium var. *laceratum*.

THE BRITISH FERN GAZETTE

NEW SERIES

Vol. VIII.

WINTER 1956

No. 7

CONTENTS

	Page
EDITORIAL NOTES	155
OUR FRONTISPIECE	156
THE ANNUAL MEETING, 1956	156
INTERIM FINANCIAL STATEMENT	157
FERNS AND A WELSH HOLIDAY	158
THE BRITISH POLYSTICHUMS	159
HABITATS OF POLYSTICHUM ANGULARE (SETIFERUM) AND SOME REMARKS ON ITS VARIATION	168
THE ANNUAL EXCURSION, 1956	171
SOUTHPORT SHOW, 1956	174
FERN GOSSIP	175
LIST OF MEMBERS	175

EDITORIAL

This year's excursion, held as it was in an almost unknown and unexplored area, so far as the Society is concerned, effectively dispels the idea that there is nothing left of interest to be found.

Certainly, crested or plumose or divisilobe varieties are seldom seen nowadays, though some of these, in a condition which may develop into good forms, were secured.

But problems were numerous, and will give those who saw them much to think over, and ample material for our object of studying ferns.

It was a very great pleasure to be paid a visit early in July by our Member, Mr. Boughton Cobb, during his stay in England: and to be honoured by the gift of his very excellent recently published book on the Ferns and their allies of North-eastern and Central North America: illustrated by charming and most accurate drawings by his god-daughter, Laura Louise Foster.

We share in this country some 20 of the species in the area stated, and the text and figures of these are likely to be as valuable to us as to American readers: the details given of Spinulose Woodfern and its varieties (the *Dryopteris dilatata* complex in part) are exceptionally informative.

A strongly supported proposal has been put forward to change the date of the Annual General Meeting to some time when more members can attend. As Secretary, we commend this: the best way to secure a majority opinion would be for any members, desiring to attend this meeting, to write to me giving one or more dates suitable to them. Such information will be welcome and most helpful, and we emphasize its importance.

We also stress again the fact that our financial and official year begins on July 1st, and that subscriptions are then due and will, we hope, be promptly paid to our Treasurer, whose address is on the *Gazette* cover.

Finally, we thank all contributors to this issue for their valuable and interesting articles. E.A.E.

OUR FRONTISPIECE

Our Member, Mr. R. Kaye, has most kindly photographed for us a plant of his variety of *Phyllitis*, and sends this note on it.

This fern appeared in two places in low mortored limestone walls in the Nursery some three or four years ago, and was a distinct improvement on forms of *P. s. laceratum* which had been in stock here. Some hundreds of young plants raised from spores have come absolutely true.

THE ANNUAL MEETING, 1956

The 53rd Annual Meeting was held at 3 p.m. on the 24th of May at the Board Room of the British Museum (Natural History) by kind permission of the Trustees.

The President and the Hon. Secretary were, regrettably, unable to attend. The members present were Mr. T. H. Bolton, Mr. J. A. Crabbe, Mr. J. W. Dyce, Mr. H. F. Greenfield, Mr. P. Greenfield, Professor R. E. Holtum and Dr. T. D. V. Swinscow. As Mr. Bolton was unable to stay until the end of the Meeting, the chair was taken by Professor Holtum.

The Minutes of the last Annual Meeting, substantially as printed in the Winter issue of the *Gazette*, pages 134 to 137, were approved.

The Report prepared by the Secretary was as follows:—

“The past year has in no way been sensational for the Society; but, as it has more than held its own, it may be said to have made a quiet advance.

Six members met at Wisley on August 13th and most of them were able to spend a considerable time there; and all of them with enjoyment.

At Kendal, for the Annual Excursion, five members were present; and later, Mrs. Fern Ward Crane (U.S.A.) joined the party and has since become a member.

Both these Meetings have been reported in the *Gazette*; the latter most adequately, thanks to Mr. Dyce.

The Secretary, together with our member Mr. R. H. Perry, acted as Judges at the Southport Show, Fern Classes, in August; and we both hope to do so again at this year's show.

There are six Members whose names are put forward for formal election today: Mr. W. C. Buchanan, Mr. J. S. L.

Gilmour, Mrs. T. A. Dyer, Miss D. M. White, Mrs. A. M. Tinne and Mrs. F. W. Crane; arranged in order of date of application.

A letter from our Member Mrs. Ashwood is presented for the Meeting's consideration.

Mr. T. A. Dyer sent the Secretary a very useful binding case for loose *Gazettes*, prior to permanent binding: it is made by Modern Binders Ltd., Walpole Street, Blackburn.

It may be thought, by the Meeting, worth while considering whether the Annual Meeting should not be held, as in the past, during the Excursion.

It is presumed that 180 *Gazettes* will be required."

E. A. ELLIOT, *Hon. Secretary*.

Adoption of the Report was proposed by Dr. Swinscow and seconded by Mr. Dyer.

The Treasurer then read his Report. Slightly abbreviated it was as follows:—Our finances are satisfactory, income has come in well, and only 8 Members are more than one year in arrears. Expenditure for the second year running includes the cost of only one *Gazette*, but next year we will have to meet the cost of two. We must expect increased costs, too, which will reduce the margin between income and expenditure. Other expenses have been small. A balance sheet to date is presented.

J. W. DYCE.

INTERIM FINANCIAL STATEMENT as at 24th MAY, 1956

1955	£	s.	d.		£	s.	d.
30th June				" Gazette "	23	17	6
To Balance ...	59	15	7	Printing Expenses	1	2	8
Subscriptions ...	37	0	0	Subscription—			
Donations ...		5	7	R.H.S.	2	2	0
Sale of "Gazettes"	2	3	6	Postages and Inci-			
Sale of Plants at				dental Expenses—			
Southport ...		15	0	Treasurer ...		2	10 0
				Balance ...	70	7	6
	£99	19	8		£99	19	8
1956							
24th May							
To Balance ...	£70	7	6				

Adoption of the Treasurer's Report was proposed by Mr. Bolton and seconded by Mr. Crabbe.

The results of the Elections, which followed, are:—

President.—Mr. Alston, proposed by Mr. P. Greenfield and seconded by Mr. Bolton, was unanimously re-elected.

Vice-Presidents, as before, elected *en bloc* on the proposal of Dr. Swinscow, seconded by Mr. Dyce.

Treasurer, Secretary and Auditor, unanimously re-elected.

Committee.—On Mr. Bolton's suggestion, seconded by Mr. Crabbe, the existing members of the Committee were re-elected *en bloc*.

New Members. — Nomination forms for new members were presented and they were formally elected. Their names are as given in the Editorial Notes, page 134 of the *Gazette*.

The questions raised by the Secretary and other questions which were raised during the Meeting were discussed and a decision given where possible. In some cases, e.g., arrangements for next Year's Annual Meeting, no useful discussion was possible in the absence of the President. In other cases the Meeting arranged that its views should be considered in the light of further investigation so that action can be taken later where that may prove to be desirable.

Mr. Dyce exhibited pinnæ of ferns he had collected near Howley in September, 1953—see *Gazette* for 1954, page 93. One of these particularly, as a result of careful cultivation, proved to be nearly as good as Dr. Stansfield's fine Howley acutilobe and was duly admired.

The Meeting passed a vote of thanks to the Trustees of the British Museum for allowing the Society to hold their Meeting in the Board Room; and individual Members expressed grateful appreciation of this privilege.

The Meeting was ably conducted by Professor Holtum at a moment's notice; and the interest he displayed in the Society's affairs was much appreciated. On Mr. P. Greenfield's proposal a hearty vote of thanks was accorded him.

FERNS AND A WELSH HOLIDAY

When the world tires I am thankful for memory for I am able to recall the beauty I have seen and the thrills experienced when I found my first specimens. The wanderings of my mind as I travel along hedgerows, woods among rocks, streams and waterfalls bring peace and I am grateful to the Great Architect for the beauty of creation.

One week's Fern hunting in Wales leaves particularly happy memories for then I found my first *C. officinarum* and on another day I discovered more plants in a new locality where it had not been recorded previously.

On another day I found an odd plant of *P. setiferum* in a wood and this I believe was another new spot for the species.

Perhaps one of my happiest memories was of the road-side when I searched a wall over half a mile on each side of the road. The wall was a lovely sight with *A. trichomanes* and I was hoping to find other rarer varieties known to be in

the vicinity, such as *C. crispa*, but I failed, but some time I will search again.

A. marinum is to be found on the cliffs but unfortunately I was not well enough to make this search.

The following places were visited :—First day, Tal-y-bont and the Leri Valley; second day, Cwm Woods and the Clarach Valley; third day, Llanrhysrd Road, Abernant Dingle and Llanilar; fourth day, the Devil's Bridge, Parsons Bridge and the slopes of Plynlymon; fifth day, Glandyfi and district, and the following species were seen :—

A. adiantum nigrum (these were very interesting and varied), *A. ruta-muraria*, *A. trichomanes*, *A. filix-foemina* (purple stem), *B. spicant*, *C. officinarum*, *C. fragilis*, *D. dilatata*, many of which were of such size and beauty that it was difficult to believe they were the same species as mine, *D. filix-mas*, *G. dryopteris*, *P. scolopendrium*, including *multifidum*, etc., *P. vulgare*, *P. setiferum*, *P. aculeatum*, *T. oreopteris*, *T. phegopteris*, *H. peltatum* and *H. Tunbridgensis*, Club mosses, *Ophioglossum*, and *Botrychium*.

Others known in the district but not found were *A. marinum*, *A. septentrionale*, *C. crispa*. I am sure an expert collector would have found other varieties which my limited knowledge failed to identify, and, if like us, he arrived at the Devil's Bridge Hotel when their variety of Cornish Pasty came from the kitchen he would consider his search for Ferns had resulted in at least one discovery of note.

T.A.D.

THE BRITISH POLYSTICHUMS

An attempt is made in this article to get a somewhat clearer idea than has been possible hitherto, of the three ferns included under this genus: by comparing them one with another.

The names are arranged in an unusual order: this is due to a recent discovery, graphically described by Professor Manton in *Problems of Cytology and Evolution*, that *aculeatum* has 164 chromosomes, while the other two have 82 each.

This is explained as being due to a cross having occurred between two *Polystichum* species, each contributing 41 chromosomes to the hybrid; which then proceeded to double their number, thus getting 164. This view is supported by a sentence or two in Wilma George's *Elements of Genetics*, in which there is a clear and as simple as possible description of the process of chromosome doubling or further multiplication.

“ A tetraploid may arise by the doubling of the chromosomes of an otherwise normal organism. . . . Alternatively, a

hybrid organism, in which the two basic sets of chromosomes are not identical, may undergo doubling of the sets. . . ."

Professor Manton thinks that *P. Lonchitis* has crossed probably with *P. setiferum* and that *P. aculeatum* is the result: a tetraploid hybrid, not a species; arising in the alternative way, we suggest, described above. For this reason, the two parent ferns are here dealt with first, and their progeny afterwards.

There is a possibility that an origin of this kind may confer specific rank; on this point, Cytologists can inform us.

It is definitely fertile; there is a cross between it and *Lonchitis*, known as *P. illyricum*, which has occurred naturally. *Lonchitis* has been found, recently, to have crossed with the American *P. acrostichoides* in Ontario: under natural conditions.

This leads to a consideration of the ferns morphologically, that is, of their external appearance, the only way in which most of us can study them.

By the kindness of the President, and of Dr. Warburg, it has been my good fortune to examine a large number of specimens of *Lonchitis* and *aculeatum*, from all parts of the British Isles where they grow.

Polystichum Lonchitis. Holly Fern. Alpine Shield Fern.

This is probably better known from illustrations rather than actual plants. It has few habitats in England, Wales, Ireland; though more frequent in Scotland and more abundant where found there, it is even so not always accessible with ease: one reason being that it is not seen below about 1,000 feet.

Fortunately, it lends itself to illustration; there is an excellent photograph of it by Dr. Swinscow in the *Gazette*, Vol. VIII, No. 3. In any case, its appearance is very distinct and very uniform, so that one frond looks much like any other: it is one of the least variable of our ferns. E. J. Lowe records, in *Our Native Ferns*, a crested form, and an imbricated.

T. Moore, in *Nature Printed British Ferns* (8vo.) refers to the former of these as "occasional and accidental." He does not mention the latter. Both these writers mention the occasional production of small bulbils at the base of the lower pinnæ, from which new plants can be raised.

Lowe also wished to make the Irish form of the fern distinct, under the name *P. confertum*; it was probably identical with the imbricate form already mentioned. Dr. H. Christ (of Basel) names four sections into which the fern can be separated: these are Continental, and do not concern us here. Possibly very close study of British specimens would

reveal some or all of these, but the rarity of the plant in this country means that there would be correspondingly few examples of any one section.

As already stated, *Lonchitis* is distinct in appearance. The young fronds are of a light green with a "satiny" look: later, they become darker, and dull in hue. The frond is narrow in comparison with its length: where the root grows in a cleft of a cliff or rock-face, or from under a boulder, the stem becomes elongated; and the pinnæ, which are set alternately on each side of the stem, do not extend to the base but leave two or three (or possibly more) inches bare.

Otherwise, the stem bears pinnæ to the base: and, when growing amongst heather or such herbage, assumes a more upright position.

The pinnæ are undivided. At the base of the upper edge there is a more or less well-defined "thumb"; this edge is often curved from base to apex, while the lower one "bulges" outwards, as it were. Both edges carry a close set row of spines, set on teeth which develop as the frond matures and which curve eventually towards the pinna's apex.

This is usually said to be a difficult fern to cultivate, and judging by its natural conditions this is understandable: it likes constant-flowing moisture with perfect drainage, and a clear atmosphere. It has also been said that a low-lying elevation is harmful to it.

However, two plants brought back from Switzerland in 1955 are in my Fernery: at about 120 feet above sea level instead of nearly 6,000.

Both are bedded in a heap of smallish pebbles, with not overmuch sandy soil mixed with beech leaf-mould and a good dose of lime flour. The crowns were covered with pebbles, a good layer, all winter and until the end of April. When dry spells came, except in times of frost, plenty of water was given. One plant is very young and small but has (in May) three fronds. The other, a mature plant rescued from a fallen mass of limestone where it could not have lived much longer, has eleven fronds. It remains to be seen how long this method will succeed; at present it seems quite hopeful, in occasional river-mist but otherwise clear air.

Polystichum setiferum Forskål. (*Polystichum angulare* Presl.) Soft Prickly Shield Fern.

This, the other presumed parent of *P. aculeatum*, is, unlike *Lonchitis*, one of the most variable of British ferns.

It is, however, not difficult to describe the type to which, apart from varieties, it adheres consistently.

The rootstock or caudex, from which fronds spring, is usually thick and upright, growing in old plants almost into

a trunk. Sometimes it becomes decumbent or spreading more or less horizontally, and with a tendency to form several crowns.

The fronds are normally large; softer, and less upright, than in *aculeatum*; of a rather paler green.

Pinnæ numerous, alternate (i.e., not opposite one another on the rachis), at right angles to the rachis, except sometimes the lowest pair being bent downwards.

This pair is usually shorter than those above but not much shorter; unlike *aculeatum*: and they are higher on the stem, leaving the lower part of it bare for several inches.

The pinnules are usually more or less of the same size, except of course toward the tip of the pinna; normally, the upper basal pinnule is not, as in *aculeatum*, considerably the largest: except from about the centre of the frond, towards its apex.

Owing to the way they are set on the pinna, they present a more upright appearance than in *aculeatum*; and are distinct and separate from each other: *with short stalks*: and almost of a right-angled triangular form.

Only in one detail do they differ much, that is in size.

Sometimes a fern will be found with fronds whose pinnules are very large: elsewhere, another specimen has them very small. As an average, somewhere about 5mm. wide and 10mm. high is fairly correct.

It is quite likely that this size difference is due to habitat: the larger-pinnuled (which are on larger fronds) growing in better conditions than the smaller. All round the pinnule, except along the base, there are short stiff bristles, or setæ; hence the name *setiferum*, bristle bearing: these are more numerous at the apex than in *aculeatum*.

We are indebted to Mr. P. Greenfield for his article in this issue which carries an account of this fern to completion and is to be read in conjunction with the present one.

He makes special mention of natural varieties which have at various times been found growing wild. In *Our Native Ferns*, 1867, Lowe described some 160, and in his book in the *Young Collector's Series* (1908) he names 366.

Of these, a few have been preserved in the Herbariums already mentioned: the most notable are:—var. *acutilobum*, which is still in cultivation, and is or was also named *proliferum*. var. *interruptum*, not unlike *aculeatum* var. *pulcherrimum* Bevis but smaller. var. *tripinnatum*, with pinnules divided, and still occasionally found wild. var. *divisilobum*, a further development of var. *acutilobum* with the lower pinnules on each pinna longer than the upper ones:

this is also still cultivated in one of its forms known as *divisilobum* Bland, after its finder.

Another variety, *intermedium*, suggests by its name the very difficult problem, referred to by Mr. Greenfield, of Intermediates: in this case, between *P. setiferum* and *P. aculeatum*. Here again, more will be said in this article. These varieties have sometimes been alluded to by botanical writers as monstrosities: we think that this is a most unjustified term, since it is usually taken to mean something abhorrent and ugly. In the varieties still cultivated and enjoyed by many fern horticulturists there is no trace of this, but often a grace equalling or excelling that of the normal species. In any case, such forms, being natural growths, are part of the general scheme of nature, and as such are objects worthy of, and calling for, attention and study.

As far as the writer knows, no one has yet explained—or even done much towards finding why — some fern species break out in this strange way, while others show little or no desire to do so. One suspects that any study of this kind would keep an investigator busy for a long while: one believes also that it would prove to be of a very considerable interest.

Polystichum aculeatum, Common, Hard, or Prickly, Shield Fern.

In the new *British Flora of Clapham*, Tutin and Warburg, the Latin name adopted is *Polystichum lobatum* (Hudson) Woyнар. This is not used in the present article because, at one time in the fern's complicated naming, a variety or form of it was called *lobatum*. Confusion therefore is possible between the type and variety, under the same title: if the exact status of the latter could be settled, or if, better still, it could be decided to abolish it as an entity; then the name *lobatum*, for the type, could be used with no chance of misunderstandings.

The question, however, that arises is, what is the type? After examining specimens, it appears that there are three, or perhaps four, distinguishable forms, all *aculeatum*, but each with well-defined differences. The form or variety called, long ago, *lobatum*, can be taken first. T. Moore thought it was permanently distinct, while E. J. Lowe held exactly the opposite view; and this latter opinion is shared by the present writer.

The main feature of this fern is that the pinnules are not completely separated from one another but are decurrent or confluent: that is, the base runs along until it touches the next pinnule; or goes further and becomes united with the next.

A specimen obtained in Devon in 1923, showing every feature of the so-called variety *lobatum*, has been grown on since and one or two offsets also removed from it and grown as separate plants.

The original one, and an offset which has been kept, now has the pinnules completely separate one from another: this is taken to show, as Lowe thought, that the "variety" is simply a stage in the development of normal *aculeatum*.

It has all the same certain features of its own. The frond is narrow, somewhat rigid in appearance: the pinnules are of a longish-oval shape, with few teeth, these being tipped with a stiff spine: the apical spine is strong and is flanked by two others, one rather smaller, the other much more so. The pinnule on the upper side of the pinna and nearest to the main stem, stands upright, whereas the remainder bend towards the tip of the pinna. It is also quite noticeably the longest, sometimes one-third longer than the rest.

Sori are numerous, but a few attempts to sow spores have yielded nothing.

As in all true *aculeatums*, the pinnæ run to the base of the stem, the lowest two or three pairs being very short.

In contrast to this is a form which may perhaps be taken as the real type. This by comparison with the foregoing is of luxurious growth, with longer, and in particular wider, fronds; there is a rather softer, more "leafy" look about them. This is form II.

The pinnules are set on their stem in the same way as in the previous form, with the basal upper one also longest. Their edges, however, are more jagged, with narrow projecting teeth each tipped with a spine: at the apex there are several spines.

They are broader and more flattened out (form I pinnules are inclined to curve inwards towards their underside) and in fact look much more like those of *setiferum*.

One is rather inclined to think this form occurs more in Western England and from the North Midlands northwards.

In the Herbariums consulted, a few specimens were seen of a form which is presumably rare but existent, and is sufficiently distinct to be noticed here: this is the variety *argutum* of T. Moore, form III. It is illustrated in his folio volume in full (in the octavo edition only a pinnule is shown) and the pinna measures 100mm. in length, against a normal one of 80mm.

The pinnules, or some, attain 15mm. in length but barely 4mm. in width; against 12 or 15mm. by 5 in the normal: it is their narrowness that is peculiar.

Some Herbarium examples have a definite curve, scythe fashion, on the upper side: on both edges there are long spines.

A few specimens were also noted of a form which may not perhaps be uncommon, but which might be passed over for Herbarium collection because thought to be stunted or undeveloped. It is just this which makes it distinct: a plant with fronds short, narrow, small pinnules, of a neat appearance as its characteristic feature.

This account of forms began with a so-called variety, and ends with another, which may have some claim to recognition: this is variety *cambricum*, formerly *lonchitidoides*. It is the fern which when found growing wild is mistaken for *P. Lonchitis*: but, having personally made this mistake, the writer can say with assurance that the plant became normal *aculeatum* in a year or two. Some authors have considered it to be an early stage of the form *lobatum*, but this is not my experience.

What has been said up to now may give the idea that *aculeatum* is straightforward and comparatively simple, even allowing for the forms which have been mentioned.

A number of varieties have been in the past found growing wild: C. T. Druery listed nine, E. J. Lowe eighteen: by the word varieties in this connection there are contained crested, imbricate, and other symmetrical departures from the normal. Some are still cultivated and extend the range of this attractive fern: one still deservedly popular is *P. aculeatum pulcherrimum* (Bevis), found in 1876, on which more will be said presently.

Both *P. setiferum* and *P. aculeatum* are easy to grow. They occur in limestone soil and are therefore tolerant of this: but do best in well-drained loam and leaf-mould, with protection from wind, in a fairly shady place.

Care should be taken to ensure rain reaching the roots easily, and therefore shade does not mean putting them under overhanging trees or bushes, which not only keep much of the rain from them but rob their roots of their natural soil-food.

Being strong growers, plenty of space should be given them; four feet each way is not too much, to allow the fronds to expand without mingling with those of nearby plants.

Turning again to hybrids, and with them to introgression, referred to by Mr. Greenfield in his question-provoking article, a wide field of possibilities appears open, at least to the amateur mind.

P. aculeatum, according to Britten's *European Ferns*, is one of the most widespread plants in the world. Mr. Green-

field rightly stresses the fact that its presumed parents only meet in certain conditions which seldom occur; this means that the cross, if it was made in one such area only, must have taken place in a very remote past age, to enable the hybrid to spread as it has done.

It is, however, possible in theory that the necessary conditions were, in the distant past, more often, or rather, more widely available than now: there would then be a number of points of origin of the hybrid, not merely one, and the cross may have occurred at different times.

Mr. Greenfield also mentions introgression, which is understood as a technical term for back-crossing, or the cross between a parent plant and a hybrid formed by a cross between that parent and another species.

This has been carried out by Professor Manton between *P. setiferum* and *P. aculeatum*, artificially in the laboratory; and is recorded as having occurred naturally in Switzerland (*Fern Gazette*, Vol. VII, page 136), where a description by Dr. H. Christ is quoted.

There is in this a possible explanation for some of the "intermediate" *Polystichums* which have been, and probably still can be, found growing wild, in which frond characters of the two parents (species x hybrid) are so intermingled that it is extremely hard, even impossible, to say "This is *setiferum*" or "This is *aculeatum*."

The process can be carried at least one step further. Although the offspring of such a cross bears spores, they are found to be abortive, incapable of producing prothalli. It appears, however, that a few of such spores *can* reproduce: though in the offspring it is probable that there will be complete sterility. If, then, the offspring of *setiferum* x *aculeatum* be termed A, slightly capable of reproduction: and that of *aculeatum* x *setiferum*, which in theory need not be the same as A, be termed B; there is now a possible cross A x B, and another B x A, giving more intermediates still more puzzling; or perhaps creating the peculiar ugly things which occasionally crop up and have been already referred to as monstrosities.

There need not be a cross: if A is only barely capable of reproducing, and B is also, the offspring in each case might not come true; A's progeny being unlike A, and B's unlike B.

A concrete instance of these remarks can, in the writer's opinion, be found in *P. aculeatum pulcherrimum* Bevis, discovered in 1876. It is a bold statement, in view of all the past controversy over this fern, to claim that it may be a hybrid between *aculeatum* form III (var. *argutum* of T. Moore) and *setiferum*. The reasons for saying this cannot be set out here: what matters now is the story of its behaviour.

As now grown, it is completely barren, with no trace of sporangia. About 1906, a few spores were found and sown: the results were some normal plants, some of the Bevis type, and a number of an entirely new form *P. aculeatum gracilimum*. There were from C. T. Druery's sowing: another, made by Mr. C. B. Green, produced *P. aculeatum plumosum*, *Gazette*, Vol. I, pages 3, 119, 226.

The story continues in subsequent *Gazette* volumes, on similar lines: but in Vol. IV, No. 10, there is a significant statement.

Seedlings from a sowing of pulcherrimum spores, made by Dr. F. W. Stansfield, produced fronds of an indeterminate character apparently intermediate between aculeatum and angulare (setiferum). Ultimately the plants became aculeatum divisilobum; but this intermediate character during their growth does something towards supporting the claim that has been here advanced: an opinion that was suggested when the fern was first known, by G. B. Wollaston.

It cannot, however, be a first cross, that is a first generation offspring of the parents, whatever they were.

By the kindness of Professor Shaw at the Oxford University Botany School, who made a chromosome count for me, from root-tips, the result of 58 chromosomes was obtained, with a possible error of 2 each way; but 56, 58, or 60, whichever is the exact number, does not suggest any clue to parentage.

The problem must be left there at present: it is, perhaps, insoluble.

My appeal for fresh, growing, fronds was most generously and kindly responded to by Mr. Dyce, who collected a few from Skye and a large number in Inverness: by Mr. N. Robinson, who sent some from Hutton Roof: and by Dr. Swinscow, whose contributions came from Norfolk, Yorkshire, and the Lake District.

All these specimens were of real value and interest, not least because, like the herbarium specimens examined, they came from widely separated habitats. A note would have been made on them in this account, were it not for the fact that during the official Excursion in Somerset, *Polystichums* were found in abundance and, in many cases, in very perplexing forms: all five Members present found themselves puzzled; even Mr. P. Greenfield, whose careful study of *P. setiferum* is evident from his account of that fern in the present paper.

By way of conclusion, therefore, some outstanding, contrasting, external details of *P. aculeatum* and *P. setiferum*

are here given: these are my own opinion, which is not always fully shared by more competent botanists.

I offer it, therefore, for what it is worth, and subject to criticism.

	<i>P. setiferum</i>	<i>P. aculeatum</i>
Pinnæ.	Longest at about half-way up frond. Lowest pair not much shorter than those next above.	Longest at mid-frond but less so than in <i>P. setiferum</i> . Lowest pair distinctly shortest, or lowest two pairs.
Pinnules.	Distinctly stalked, the base of pinnule being raised above and clear of the <i>pinna</i> rachis. All pinnules nearly equal in length: right-angled triangle in shape.	Narrowed at base but without a real stalk. Basal <i>uppermost</i> pinnule distinctly longer than the others, which tend to slope sideways and are more or less oval.
Sori.	These are set at the tip of one of the short, secondary, veins. The pinna (or whole frond) should be held up against a strong light, and a lens used, to get a proper result.	Set about half-way along a main, long, vein.
Texture of frond.	Soft: pinnules more or less transparent when held up to light.	Harder, tougher: pinnules often opaque, darker green.
Main (frond) rachis.	Lowest pinnæ set some way up from <i>base</i> of stem.	Lowest pinnæ usually not more than 3 inches from <i>base</i> of stem.

E. A. ELLIOT.

HABITATS OF POLYSTICHUM ANGULARE (SETIFERUM) AND SOME REMARKS ON ITS VARIATION

Polystichum setiferum prefers warm, fairly dry, sheltered and well drained conditions such as are afforded by the banks of deep lanes in S.W. England. It is found also farther north in areas near our western seaboard and farther east in Southern England, gradually petering out in Kent. It may occur elsewhere in Britain but only in particularly favourable and usually isolated habitats.

As compared with *P. aculeatum*, *P. setiferum* has been regarded as very variable, the variations being mostly pleasing and not extreme, and very rarely freakish. Many of these wild varieties have been collected for garden cultivation; and sowings of them have produced many highly decorative forms. Occasionally some doubt was felt whether some of the varieties attributed to *setiferum* should not have been attributed to *aculeatum*, and it has gradually become clear that there is interplay between these two ferns.

Apart from the more distinctive wild varieties a considerable number of forms has been noticed where there is no very pronounced departure from the normal but showing minor characters slightly suggestive of both *setiferum* and *aculeatum*. For some remarks on intermediate forms see *Gazette* for 1952, pages 7 *et seq.* Such forms came particularly under the notice of Mr. J. W. Dyce and the writer in the course of hunting for varieties in Dorset, Devon and South Somerset in 1952 and 1953 (see particularly *Gazettes* for 1952, page 19 *et seq.*, and 1954, page 91 *et seq.*).

Intermediate forms in general have been mentioned in books on ferns from the beginning, but it is only in recent years that any scientific attention has been given to them. One suggestion is that they may be the result of introgression (hybrid origin and back crossings). It seems not improbable that these *Polystichum* intermediates may have so originated; but it is difficult to verify the supposition as there are many unknown factors, e.g., the period (inevitably a very long one) needed for the production of so many intermediate forms, and the absence of the originating plants.

In the area where these intermediate forms have been particularly noticed the number of plants of normal *setiferum* and *aculeatum* is not excessive. *Setiferum* sometimes occurs in moist soil and in shade. In such conditions it often grows to a large size, and if there is any variation at all in such colonies it is likely to be only of the *decompositum* type, e.g., *sub-tripinnatum*. The comparative frequency with which this type of variation occurs may be deduced from the fact that it was noticed even in Newman's time: he gives an illustration of it in his *History of British Ferns*.

Hunting for varieties of *setiferum* for half a century has led our experienced members to the conclusion that lime in the soil is a factor in causing variation. Some of these variations may be outside the general run of intermediate forms. As bearing on this conclusion the writer has recently had an extraordinary experience. A small colony of *setiferum* in the eastern part of Surrey where the fern grows very sparsely was found to include, besides two or three apparently normal forms, a range of varietal forms closely resembling some of

those seen in the West Country area which has been described. The colony was on the Lower Greensand formation which is in general limeless. Did this mean that the lime theory of variation would have to be given up? Fortunately not. The ferns were growing in a depression with rocky sides and the rock appeared to be ragstone, which is exposed here and there for many miles along the Lower Greensand zone. After the ragstone has a lime content; and on test of the rock near the ferns, lime was found to be present.

By a mere chance, after this happening, the following remarks by one of our eminent botanists came under notice:—

“Variations may affect any structure and any function. Mutation it is often stated is random. The thoughtful naturalist, however, sometimes wonders whether there is not some agency or mechanism besides natural selection which in the long run directs evolution along some limited lines. It is possible that the chemical and physical constitution of the chromosomes and cytoplasm determine that certain mutational changes shall occur in such sequence that characters are produced in an orthogenetic (straight line) series . . . it is as well not altogether to stifle such heterodox doubts of accepted theories as sometimes intrude when contemplating past changes and the possibility of future changes in British plants.”

That may stand for the moment as a reminder that there may very well be a chemical cause for some of the variations in *setiferum*.

It will be obvious that much more field-work is necessary. Colonies of *setiferum* should be searched for and a note made of aspect, soil, presence or absence of variation and whether *aculeatum* (and what form of *aculeatum*) is in the neighbourhood. The only area that has been thoroughly worked by the Society is in South Somerset, West Dorset and East Devon. Some hunting has, however, been done in past years in country near Totnes, Sidmouth, St. Austell, Helston, Barnstaple and Tenby. There should be many other areas which can be profitably examined.

While, as stated above, uncertainty as to the time taken in the production of intermediate forms presents a difficulty, it is not impossible to make some guesses about the back history of *aculeatum* and *setiferum*. *Setiferum* and perhaps the hardier *aculeatum* must have entered this Country after the end of the last Glacial Period as soon as the climate in southern England was becoming tolerable for these ferns, say 7-8,000 years ago. They may have entered the south-western counties direct or over the isthmus near Dover and Hastings which was not destroyed by the sea until about 5,000 years ago. The country between the east and west points of southern England could have afforded a passage for ferns in

either direction: it would include the Lower Greensand ridge and forest areas further east and south.

The fact that the immigrant ferns would meet with a changing climate might account for their loss of stability and the production of intermediate forms, and possibly more extreme varietal forms; but the process would inevitably take thousands rather than hundreds of years. On the whole it seems likely that the two ferns were already to some degree unstable when they reached this Country. It should be possible in time to verify this supposition by a close study of forms on the Continent, where intermediates are known to occur.

THE ANNUAL EXCURSION, 1956

This year Wellington in Somerset was chosen as a centre for the annual excursion, which took place during the first week in September. Mr. Greenfield and I travelled down on the Saturday, to meet Messrs. Crabbe and Robinson, who had arrived earlier, and had already put in a day's hunting. The Rev. E. A. Elliot arrived on Sunday evening to complete the party which was very comfortably quartered at Wright's Hotel.

Our weather was mixed, particularly during the first half of the week, with heavy showers and periods of sunshine. Some days were reasonably good and allowed us to hunt comfortably, but on others we carried on, wet but not miserable, using the cars as shelter when conditions were at their worst. Some of us, from personal experience, can vouch for the fact that it isn't very comfortable excavating a fern from among the tangled roots in a thick hedgerow during a thunderstorm.

Wellington made an excellent centre for our purpose. It lies at the foot of the northern slopes of the Blackdown Hills, within easy reach of the steep narrow roads which run down the hills, their hedgerows and banks rich in ferns. To the north-east lie the Quantock Hills, with more good hunting ground, and to the north-west, the Brendon Hills, in a fold of which lies Nettlecombe, well known as Elworthy's centre where so many of his fine varieties were found. We hunted in all these areas and have obtained a good general picture of the fern distribution.

The total number of species found is not quite as high as we expected, being only 16. Some ferns were noticeably absent, such as the beech and the oak ferns; others were not common, namely *Ceterach officinarum*, *Dryopteris spinulosa*, *D. aemula*, and *Thelypteris oreopteris*. Three colonies of *ceterach* were seen, and one of *aemula*. The *spinulosa* was very much in the "complex," showing clearly some *D. dilatata* characters. *Asplenium trichomanes*, *A. adiantum-*

nigrum, and *A. rutamuraria* were generally distributed wherever they found a suitable terrain, as was *Blechnum spicant*. Commonly found were *Athyrium filix-foemina*, *D. filix-mas*, *D. borrieri*, *D. dilatata*, *Phyllitis scolopendrium*, *Polypodium vulgare*, and last but by no means least, the fern which was our chief attraction in the West Country, *Poly-stichum setiferum*—we still prefer to call it by its old name “*angulare*.” *P. aculeatum* was also found in several places, but more common were intermediate forms to which a lot of attention was given.

Our first hunting was done in the steep lanes to the south of Wellington, where *P. angulare* claimed most attention, particularly as it showed much minor variation, mainly in the direction of *tripinnatum*. Some *P. aculeatum* was also found, and fronds of intermediate forms were gathered. All the species listed in the previous paragraph, with the exception of *C. officinarum*, *D. spinulosa*, and *D. aemula*, were seen in these lanes. *P. scolopendrium* was everywhere, and we examined some fine colonies of polypody. Old records give the hill on which the Wellington Monument stands, as a habitat for *Botrychium lunaria*, but our searching failed to reveal it.

A day was devoted to the Howley area which had proved very interesting during our previous visits three years ago. Unfortunately this was our wettest day with thunderstorms and heavy rain, but in between the downpours the sun shone, and we contrived to do quite a bit of hunting, but not straying too far from the shelter of the cars. It was again noted how prevalent the tendency towards *acutilobum* was in *P. angulare* in the lanes round the village, and we are still not without hope of being able to find the equal of Dr. Stansfield's fine acutilobe which was collected from Howley in 1914.

The Quantock Hills do not appear to have received much mention in the records of fern-hunting, and our centre of Wellington was chosen largely because it was not too distant to enable us to explore these lovely hills. Three days were partly spent hunting on their lower slopes. We found *P. angulare* and *Phyllitis scolopendrium* the common ferns on the west side, but on the east side *A. filix-foemina* and *Dryopteris* species took their place, and very little *angulare* was seen. We especially noted during this excursion the preference of *P. angulare* for the warmer slopes facing south and west, leaving other ferns in full possession of the colder aspects.

Nettlecombe was the magnet which drew us to the Brendon Hills, and the steep slopes and wooded valleys of this range provided us with much interest during two visits. *P. angulare* was not so generally distributed, and the outstanding fern was *A. filix-foemina*, encountered in great

quantity, and variable enough to make the hunting good. Several plants verging on plumose were seen and some collected, and also one specimen showing a peculiar but regular depauperation of the pinnules which gives the fronds a very graceful appearance. This plant is being studied more closely in cultivation, and we hope, will provide the subject matter for some notes in the next issue of the *Gazette*.

Our best day was spent in the Brendon Hills, and the deep valley where we collected the lady ferns, gave us some more good things, including an extensive colony of *D. aemula*, and some *D. spinulosa*. *D. dilatata* competed with *A. filix-foemina* as the dominant carpet plant on the wooded slopes, *Thelypteris oreopteris* grew at the road side, and the banks of a rushing stream were draped with the fronds of giant harts-tongues. Later in the day we again entered *P. angulare* lanes, and collected some acutilobe specimens, and a handsome multifid hartstongue. The day finished with excitement of another kind, when a short cut to the main road through a muddy farm lane was attempted. The cars stuck in the mud on a steep hill and refused to go any further. We had quite a game getting them back again on to terra firma, and retraced our route, taking with us on the cars and on our persons liberal helpings of the red mud. We decided thereafter to give a wide berth to all farm lanes depicted in white on the map.

Once again no first-rate find rewarded our efforts, and to those of us who are variety hunters, this was disappointing but not discouraging. There were sufficient off-normal forms to hold our interest during the whole of the week, and both Mr. Greenfield and I noted that tripinnate variation in *P. angulare* was much more common than it is to the south in the Chard and Axminster areas. Fine plants of this type were seen wherever we went. Some quite good acutilobes were collected, as well as other forms of *P. angulare*. *A. filix-foemina* gave us foliose and plumose varieties, as well as the peculiar form already mentioned. *P. scolopendrium multifidum* was common all over the area, and some good specimens were obtained. One magnificent colony of *Polypodium vulgare bifidum* was found, as well as several plants with very large crenate fronds. In a wood near Bridgwater, an old record, about 100 years old, of a large form of *D. filix-mas* with deeply indented pinnules was followed up, and we found what was no doubt the form referred to, still flourishing.

The intermediate forms between *P. aculeatum* and *angulare* for which we have coined the name "aculare" are of particular interest to some members of our party, and ample material was available for study. Although *P. aculeatum* itself was local in its distribution, "aculare" was everywhere, and every day several fronds were gathered for

examination at our evening meetings. An unused dining-room was made available for our use, and here we retired each evening after dinner with the day's collections, which were spread out on tables. The ensuing examinations and discussions kept us fully occupied till bedtime. The fruits of these discussions will no doubt appear in the *Gazette* in due course from pens more able than mine to deal with the complexities of the subject matter.

And so, all too quickly but very happily, passed a most pleasant and instructive week among the ferns of Somerset.

J. W. DYCE.

SOUTHPORT SHOW, 1956

The report this year is based on copious notes made by Mr. F. Jackson and Mr. B. Hayhurst, to whom the Secretary is much indebted: as also to Mr. R. Perry for his expert guidance in the judging.

Entries were rather fewer than last year, and the standard of exhibits not as good in some cases as usual: but the space allotted to Fern Classes was well filled, and received appreciative attention from a large number of the 100,000 visitors. Class 8, the large group, was won by Mr. J. Brookfield with some good *Bevis*, *Osmunda cristata* and a mixed lot of *Polystichums* and *Scolopendriums*.

Messrs. J. Brookfield and Son came second. Class 9, six hardy dissimilar British ferns, went to Mr. Hayhurst, his *Clarissima* and *Scol. Drummondii* being the choicest. Mr. J. Brookfield was second.

Class 10, *Scolopendriums*; Mr. Hayhurst, Mr. Pye, Mr. Brookfield. *Drummondii*, *muricatum* and *crispum* were good in all exhibits.

Class 11, *Polypodies*; Mr. J. Brookfield's three good pans of *pulcherrimum*, *cristatum* and *Hadwinii* gave him first prize; Mr. Hayhurst second.

Class 12, *Polystichums*; Mr. Hayhurst first with *Bevis* and *densum*; Mr. Brookfield and Mr. Pye second and third.

Class 13, *Athyriums*; Mr. Hayhurst, Mr. Pye, Mr. Brookfield. Here, *Clarissima* was outstanding and very fine.

Class 14, *Lastreas*; here, one or two better plants than formerly were shown, first prize going to Mr. Hayhurst, second Mr. Brookfield.

Class 15, *Aspleniums*; a poor class, with one entry only, from Mr. Brookfield.

Class 16, three normal British ferns. This class also was very poor, the prizes going to Mr. Hayhurst and Mr. Brookfield.

Class 17, one British fern; this again was rather weak, both in number of exhibitors and in the specimens shown. Mr. Brookfield was first, followed by Mr. Pye and Mrs. E. Lloyd.

In the other three classes, for Greenhouse ferns, Mr. Hayhurst won two firsts, Mr. Brookfield one: they were the only exhibitors. *Adiantum* "Kensington Gem" and *Pellaea*s were the best plants shown in this section.

E.A.E.

FERN GOSSIP

We congratulate most heartily Mr. F. Jackson and his son on the re-discovery of *Asplenium x Breynii*, and give the account in Mr. Jackson's own words.

"*A. x Breynii* was first found in Borrowdale by Miss Wright and H. E. Smith 70 or 80 years ago, the habitat given as 'high rocks in Borrowdale.'

I have searched for this fern for the last 20 years or so: I found my first plant on Castle-Crag, growing on rock of the Borrowdale volcanic series.

The second one was found by my son on a hunt we had on Barf this year. Barf is a mountain of Skiddaw slate near Bassenthwaite Lake. The slate generally lies at an angle of 75 degrees, but on Barf it lays almost level in some places and in others it is strangely tilted and twisted; there are also beds of a very dense granite running through it, it was around these beds that most of the ferns grew.

A. x Breynii was growing in a very exposed place, a very poor stunted plant; I left half of it *in situ*, the other I planted in the wall of my Fernery, and it is now a fine plant."

Although a good rainfall helps our ferns to attain their best form, the seasons this year have had an adverse effect on their growth. A late winter, followed by too early a spring, and then high winds and rain, resulted in all too many cases in damaged or even defective fronds. Rather better conditions, from a fern point of view, will probably have helped our Polypodies. This is certainly the case with mine.

About twelve years ago I brought back a young *Osmunda*, rescued from a habitat in which it was exposed to danger of destruction.

It has grown steadily, though not under conditions ideal for it, but not until this year producing a fertile frond. In addition, another frond made a poor and unsuccessful attempt to produce sori.

My address is as before, but I am now in a newly built Vicarage house. In the greenhouse attached to my former

residence, a self-sown "mystery" fern appeared, which may be a *Pellea*, or a *Lomaria*: alien, anyhow, and being cultivated with much interest.

E.A.E.

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VOL. VIII

No. 8

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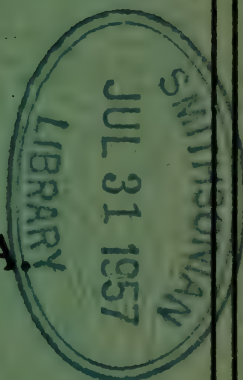
British Fern Gazette

SUMMER, 1957

EDITED BY

Revd. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.



PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are:—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually twice a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant, and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members, and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership, and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary:

REV. E. A. ELLIOT,
South Stoke Vicarage,
near Reading.



A grove of *Leptopteris* (*Todea*) *superba* growing in rain forest near the Fox Glacier, Westland, South Island, New Zealand. *Dicksonia* tree-fern in middle background.

Photo. J. D. Lewis. January,

THE BRITISH FERN GAZETTE

NEW SERIES

Vol. VIII

1957

No. 8

CONTENTS

	<i>Page</i>
EDITORIAL NOTES	179
CONCERNING ASPLENIUM ADULTERINUM	181
ASPLENIUM HUNTING IN SCOTLAND	182
POLYPODIUM IN EASTERN ENGLAND	183
FERNS IN NEW ZEALAND	184
HABITATS OF ASPLENIUM VIRIDE	188
MENDELISM IN FERNS	189
ASPLENIUM VIRIDE AND A. TRICHOMANES	193
FERN GOSSIP	194
OUR FRONTISPIECE	195
LIST OF MEMBERS	196

EDITORIAL.

In accordance with a note in our previous Editorial, and as already stated in the half-yearly Letter, the date of the Annual General Meeting this year has been fixed for Saturday, September 21st, at 2.30 p.m., in the British Museum (Natural History), Cromwell Road, London. It is hoped this change of date, though not of place, will enable more members to attend than has clearly been possible in recent years.

The past winter, unusually mild in the southern half of the country and, we believe, also less severe than it often is in the north, may have had an effect on the new growth of our ferns: at least, in bringing this on earlier, with a possible risk of damage from spring frosts.

Even these appear fewer and less severe than in other recent years, and we should be glad to hear of any note that has been taken in this way.

A note, relevant to this, will be found in " Fern Gossip " elsewhere in this *Gazette*.

A reminder that the Excursion this year is making headquarters the White Hart Hotel, Wiveliscombe, Somerset, may not be out of place: date, from August 31st, for a week.

Members are also asked to note that our financial year ends on June 30th, and the annual subscription of 10s. is then due and payable to our Treasurer: not, please, to the Secretary.

While making records for the Botanical Society of the British Isles, which has a scheme in progress for mapping plants all over these Isles, it has occurred to me that especially in the case of Ferns, a note (not necessarily for the scheme, but for future reference generally) should be kept of all localities where even the most common ferns are now found. Woods may be cut down; building may take place; there are many ways now in which ferns in particular may be exterminated. Some have been, and often can be, saved, by removal arrangement with the destroyers, but even then their home will not be that provided by nature.

Observation of this kind in my area of 25 square miles, has shown that though there are not many species, the number of plants of each of these is considerably greater than appeared to be the case when recording began three years ago: this, in itself, is most rewarding.

A request has been received via Mr. C. V. Morton, of the United States National Museum, on behalf of an Indian Student, D. S. Loyal, Department of Botany, Punjab University, P.O. Khalsa College, Amritza, India.

Mr. Loyal needs about fifty sporocarps of *Pilularia*, cut so as to expose the sporangia, and fixed in acetic alcohol (1:3). The sporocarps should be of different ages, so as to get material in the sporogenesis stage.

Any member able to help in this is requested to communicate direct with Mr. Loyal.

It is with very deep regret that we have to record the death of Harold G. Rugg on February 13th last. This news is given in the current issue of the *American Fern Journal*, and in only a brief but most sympathetic note by one of the Editors.

He was elected a member of our Society in 1909 and maintained his interest in it to the last. We hope to give a fuller account of his life in our next issue.

The foregoing had hardly been written when the further sad news came of the death of James R. Pulham, on April 20th, at the age of 84. He did invaluable work for our Society at a critical time: a full notice of his life will also be given later.

On going to Press, we regret deeply to hear of the death of Mr. W. R. Murray, Managing Director of the Courier Printing Company, on August 1st, last year.

From a memoir subsequently printed, it is evident that he made the Firm what it now is, and will no doubt continue to be: his long service in it will have firmly established its position.

We are informed that he took a great personal interest in our *Gazette* and that we can feel sure the Firm will maintain this. It was due to Mr. Pulham that the connection with the *Courier* was made.

CONCERNING ASPLENIUM ADULTERINUM.

Having spent the last twelve months in New Zealand, there has been considerable delay in my receiving the Winter, 1955, issue of the *Gazette*, and viewing the article by Mr. Greenfield on *Asplenium adulterinum* contained therein.

In spite of this delay, I think it might still be useful if I drew upon my experience of this plant in order to elaborate some of the points made by Mr. Greenfield in his article.

It should be stressed that although my experiments have led me, in common with some earlier investigators, to believe that *Asplenium adulterinum* is of hybrid origin, nevertheless this plant behaves like a normal species. It reproduces very readily from spores, and breeds true to type inasmuch as it retains its own characteristics from one generation to another.

It is therefore entirely possible to find colonies of this plant growing without either of its presumed ancestral parents (*Asplenium trichomanes* and *A. viride*), although in fact more usually one or both of these species is found associated with *A. adulterinum*.

Since *Asplenium adulterinum*, like the majority of species, is usually found as a population of plants rather than as isolated individuals, I cannot without reservation support Mr. Greenfield's advice that if *A. adulterinum* is found in Scotland "it should be left in situ." If this plant is found, it is more than likely to be in a pretty remote part of Scotland, and I personally think it very important that in the event of its discovery, a specimen should be taken, in order that the identification may be verified.

It is known that *Asplenium adulterinum* appears to be confined to serpentine rock. My experience with this plant

in Norway is that wherever *Asplenium trichomanes* and *A. viride* are found in association with *Asplenium adulterinum* they also grow on the serpentine rock.

Mr. Greenfield could not have known that I have already, in August, 1954, visited the Cabrach region on the border of Aberdeenshire and Banffshire in search of *Asplenium adulterinum* and *Asplenium serpentini*. I searched the serpentine outcrops on Craig Dorney and Craig Succouth, and also along the Blackwater river. Although I found both forms of *Asplenium trichomanes*, and also *A. viride*, I saw no *A. adulterinum*. An unusual form of *Asplenium adiantum-nigrum* is found there, but I understand that this is not the true *serpentini* or *cuneifolium*. It is not for me to make further comment on this plant since the *Asplenium adiantum-nigrum* group is at present being investigated by Dr. M. G. Shivas, who might be prevailed upon to contribute an article on this subject to the *Gazette* at some future date.

Finally, I must make reference to Page 127 of the Spring, 1955, issue of the *Gazette*, wherein it is incorrectly reported that I have "produced the Continental *Asplenium adulterinum* by the cross *A. trichomanes* X *A. viride*," Although I have made hybrids between *A. adulterinum* and both of its presumed parents, *A. trichomanes* and *A. viride*, I regret that I have never yet succeeded in producing any sort of hybrid between *A. trichomanes* and *A. viride*.

J. D. LOVIS.

ASPLENIUM HUNTING IN SCOTLAND.

My annual visits to Scotland take me within easy reach of the Cabrach district, and Mr. P. Greenfield's article *Asplenium Adulterinum* in the Winter, 1955, issue of the *Gazette* stirred my hunting instincts.

Preparatory work included the gathering of all possible information on the two ferns *Asplenium adulterinum* and *A. adiantum-nigrum serpentini* now called *A. cuneifolium*, and a visit to the Geological Museum to acquire some knowledge of serpentine rock. The Geological map of the Cabrach area enabled me to pinpoint the serpentine localities, so that no time was wasted in futile search in this mountain district, and I was able to go straight to the likely places.

After a few disappointments, my way led along a mountain road up the Deveron valley, and I stopped by a bridge over a deep corrie which looked interesting. Recent road

widening at this spot had necessitated the cutting away of the rock, leaving exposed an extensive face of a lovely green rock which I recognised as serpentine. This confirmation that I was on the right ground was strengthened by the finding of several plants of *A. adiantum-nigrum* in rock crevices.

The corrie was easily accessible from the road, and on its rocky sides I found three species of asplenium growing in profusion—*A. adiantum-nigrum*, *A. viride*, and *A. trichomanes*, together with a fern which seemed to agree with the description I had received of *A. cuneifolium*. I brought back a collection of fronds, which were submitted for examination by Mr. A. H. G. Alston to Mrs. Walker, of Leeds University, who thinks that some of them are the fern I was hunting for. Mrs. Walker hopes to pay a visit to the habitat this year to obtain suitable specimens for a chromosome count to confirm the identification.

It was extremely interesting to find *A. viride* and *A. trichomanes* growing together in such great numbers on the serpentine rock, and it seems to me there is every possibility that the hybrid *A. adulterinum* may be found in this corrie. In the few hours I was able to devote to the search I scrutinised hundreds of plants, but the colony is so extensive that much more time will be needed to cover the ground comprehensively.

I hope to visit the spot again this year, and perhaps either Mrs. Walker or I may be successful in finding *A. adulterinum*.

J. W. DYCE.

POLYPODIUM IN EASTERN ENGLAND.

Of the three different cytological types of *Polypodium vulgare* the hexaploid is, in Great Britain and indeed in Europe as a whole, much the commonest in the west. It has a mainly Atlantic distribution, apparently preferring a moister climate than the others. It is particularly abundant in the south-west of England, in Wales, and in Ireland. The tetraploid is the predominant type in the inland and eastern parts of Britain. I was therefore interested to find the hexaploid in Norfolk last summer. Near Long Stratton, nine miles south of Norwich, was a ditch about 100 yards long; one bank of it was surmounted by a hedge. The hexaploid polypody was growing freely all along the top of the ditch in the hedge. Examination of many other plants in the area showed these to be the only hexaploids there. The others were all tetraploids.

Since the hexaploid is found quite far inland in Europe --Professor I. Manton mentions the Alps in her *Problems of Cytology and Evolution in the Pteridophyta*—its appearance in the east of England is not entirely unexpected. It does all the same seem to be rare there. I have not, for instance, come across it during desultory rambles in Kent, though the tetraploid is common enough. Incidentally, I have not yet seen a polypody of any sort growing wild in Hertfordshire, where the annual average rainfall is about 22 inches a year. This seems to be insufficient now that the roads are all metalled and the water table has been lowered by London's demands. Records show that the plant was common enough 100 years ago.

DOUGLAS SWINSCOW.

FERNS IN NEW ZEALAND

Ferns are indeed a very important constituent of the flora of New Zealand, not perhaps so much in number of species (although this is quite considerable, about 150 in number), as in numbers of individuals. Even the national emblem is a pinna from the frond of a tree-fern.

It is in the rain forests of the wetter parts of New Zealand that the great abundance of ferns is to be found. However, in some parts of New Zealand ferns are very scarce, for the climate of the country is by no means uniform, there being a great range in rainfall. The distribution of rainfall, and therefore of ferns, is more even in the North Island than in the South Island, where the rainfall ranges from more than 300 inches in parts of the far south-west (Fiordland), to less than 20 inches in the middle of Otago. The prevailing wet wind comes from the north-west across the Tasman Sea, dropping most of its rain on the western side of the great Southern Alps, and it is in these wetter districts on the west that the best development of rain forest is found in the South Island.

Undoubtedly the first and lasting impression of the botanist entering the New Zealand rain forest is the great abundance of epiphytes, not only flowering plants, but an abundance of ferns, mosses, liverworts, and lichens. Ferns are conspicuous everywhere in the forest. Tree-ferns are abundant, both *Dicksonia* and *Cyathea*, while other ferns (especially *Polystichum* and *Blechnum*), carpet the forest floor, hang from the mossy branches of the trees, and cover the trunks of both trees and tree-ferns.

Most beautiful of New Zealand's tree-ferns is *Cyathea dealbata*, in which the underside of the fronds is silver in colour. It is the frond of this magnificent species which provides the national emblem. This is, however, not the largest species of tree-fern found in New Zealand, which is *Cyathea medullaris*. This species can attain tremendous proportions. Specimens well over fifty feet tall are known, while the huge fronds may be up to twenty feet long, forming an immense crown thirty feet across. There are two common *Dicksonias*, *D. squarrosa* and *D. fibrosa*, which can form splendid plants, but do not rival the magnificence of *Cyathea medullaris*.

Inasmuch as the possession of a distinct trunk raising the growing point off the ground constitutes a tree-fern, then tree-ferns in New Zealand are not confined to *Dicksonia* and *Cyathea*. *Blechnum fraseri* nearly always has a trunk some inches long, and frequently a foot or more high. Another species of *Blechnum*, *B. discolor*, sometimes displays a trunk up to a foot tall, but this not usual in this species.

Filmy ferns are plentiful in the New Zealand rain forest, and their variety is spectacular. There are about twenty-eight species in all, including some very large species, and some highly characteristic forms. They are mostly found as epiphytes on the branches of trees and the trunks of tree-ferns, but are also found on mossy banks, and on the litter of the forest floor. The magnificent pendulous fronds of *Mecodium dilatatum* may be two feet long, while those of *Mecodium pulcherrimum* can be even longer, and those of *Mecodium scabrum* can at least equal those of *M. dilatatum*. At the other end of the scale are the diminutive strap-like fronds of *Craspedophyllum armstrongii*, less than a half-inch long, and more like a small thalloid liverwort in appearance. The most striking species is the lovely and unique Kidney Fern, *Cardiomanes reniforme*, a common species in the rain forests of New Zealand, but found nowhere else in the world. As the name implies, the frond is entire and kidney-shaped. The sori are situated all round the edge of the frond. It thus superficially very closely resembles *Adiantum reniforme*, endemic to Madeira.

The reader will have already realised that the ferns of New Zealand are very, very different from those we have in Britain. However, the visitor from the United Kingdom will not find himself confronted with a flora lacking any familiar features. Some of the genera will be known to him, e.g., *Polystichum*, *Asplenium*, *Blechnum*, and *Ophioglossum*, although the species are different. Nevertheless, the general

aspect of the flora will be different. Indeed, the two floras have less species in common than was believed twenty years ago. It now seems that only two species of ferns are in fact common to New Zealand and the British Isles. These are *Asplenium trichomanes* and *Anogramme leptophylla*. A third species, *Botrychium lunaria*, has now not been found in New Zealand for more than seventy years. *Thelypteris palustris* is present in New Zealand, but as a very distinct Southern Hemisphere form, distinguished as subspecies *squamigera*. Bracken occurs in New Zealand, but is distinguished specifically as *Pteridium esculentum*. *Cystopteris fragilis*, *Hymenophyllum peltatum*, and *H. tunbridgensense* are all recorded for New Zealand, but the plants given these names are quite evidently distinct from their British counterparts.

The keen fern-grower will find a few of his most familiar plants growing wild in New Zealand. Two species of *Leptopteris* (*Todea*), *L. superba* (Prince of Wales' Feathers), and *L. hymenophylloides*, are frequently grown in Wardian cases, and in filmy fern houses, where these exist. In New Zealand, these plants are naturally most common in the wettest areas, where they occur, sometimes in abundance, on the floor of the rain forest, especially in wet gullies and other such very humid places.

Asplenium bulbiferum is one of our most common greenhouse ferns, and because of the bulbils produced on its fronds, one of the most easily propagated. This species, popularly known as "Hen and Chickens" on account of the bulbiferous habit, is very common in forests throughout New Zealand. However, the form most commonly cultivated, var. *tripinnatum*, is apparently rare in New Zealand, where the typical form has the frond much less finely divided than in the variety.

Apart from *Asplenium bulbiferum*, perhaps the ferns most commonly encountered growing on the forest floor are *Polystichum vestitum* (reminiscent of our own *P. angulare*), *Asplenium lucidum*, a fine plant with a magnificent sheen to the surface of its large deep green simply pinnate fronds, and several species of *Blechnum*.

Blechnum is a very evident genus in New Zealand forests, and one large species, *B. procerum*, has become especially abundant on the steep banks alongside the roads traversing the forests. The fronds of this handsome plant, which are frequently well over four feet long, are especially beautiful in the young expanding state, when they possess a fine reddish tinge.

Not all the New Zealand ferns inhabit the rain forests. Indeed even the driest and warmest rocks are not devoid of ferns since three species, *Cheilanthes sieberi*, *Cheilanthes distans*, and *Pleurosorus rutaefolius* prefer such situations. An interesting point is that the first two of these plants are both suspected to be apogamous, a characteristic which would evidently help them to reproduce in these conditions of sparse moisture.

A few species are found at alpine levels. *Polystichum cystostegia* is nearly always found amongst rocks above the tree-line, and may ascend to over 5,000 feet. Another fern confined to the mountains is the tiny *Grammitis pumila*, the fronds of which do not exceed one inch in length, and are usually considerably smaller.

There are four species which are found almost exclusively in the immediate vicinity of hot springs in the thermal region of the North Island. These plants flourish in the warm steam rising from the hot water. The species concerned, *Nephrolepis cordifolia*, *Dicranopteris (Gleichenia) linearis*, *Cyclosorus dentatus* and *Cyclosorus gongylodes*, are all more or less widespread in tropical regions, and their presence in New Zealand may be regarded as a relic of a flora of warmer times.

That element of the New Zealand fern flora which can be regarded as of tropical origin is not restricted to the four obvious examples quoted above. Some genera are much more prominent in the north of the North Island than elsewhere in the country. These include such pre-eminently tropical genera as *Adiantum* and *Pteris*. Of the four species of *Pteris* in New Zealand, two are confined to the far north.

In general, the flora of New Zealand is very characteristic, with a high degree of endemism. This is in accordance with its isolated position. With regard to the ferns, about two-fifths are confined to New Zealand. The New Zealand ferns have their closest affinity with the Australian fern flora, and indeed another two-fifths fraction of the New Zealand species also occur in Australia.

The more ancient groups of ferns are well represented in the country. These archaic types include *Marattia* and *Gleichenia*, and more specialised though still very old forms like *Schizaea* and *Lygodium*, *Ophioplossum* and *Botrychium*, as well as the curious but very handsome *Loxsoma*, the phylogenetic position of which remains uncertain.

A charming feature of popular interest in the ferns of New Zealand is the frequent choice of Maori rather than English names in colloquial description. Thus the great tree-fern *Cyathea medullaris* is "Mamaku" to the average New Zealander, while *Cyathea dealbata* is not only "Silver Fern," but also "Ponga." Similarly, *Dicksonia fibrosa* is "Wheki-ponga." *Gleichenia microphylla* has the rather startling name of "Wae-wae-kaka," though it must be admitted that a majority of naturalists would call it just "Tangle-fern." Sometimes, the Maori name is as beautiful in translation as it is euphonious in the original. Thus *Sticherus cunninghami* is to the Maori "Tapu-wae-kotuku," which means "the footprint of the white heron," which is surely far superior to plain "Umbrella Fern" !

J. D. LOVIS.

HABITATS OF *ASPLENIUM VIRIDE*.

Although something was said about habitats of *Asplenium viride* in the *Gazette* (No. 6) for Winter, 1955, it seems desirable to go further into the matter in view of the reference to this fern in Scotland in the present issue.

The habitats in England previously mentioned, except that in the Lake District, were on Carboniferous limestone, of which the amount exposed in Scotland is insignificant. Nevertheless many flowering plants of the limestone and chalk in England grow also in Scotland; and the explanation is that they find a suitable home on basic rocks. It is reasonable to suppose that such rocks could equally support the lime-loving *A. viride*. We need not go to Scotland to verify this supposition. On a visit to Wales last year the writer took the opportunity to look up a habitat of *A. viride* among the rocks below the summit of Cader Idris. Here in a runnel was *Sphagnum*, *Saxifraga stellaris*, etc.—evidently not a suitable place for *A. viride*. But not far away were some large boulders, on and at the foot of which *A. viride* was flourishing. These boulders are of pillow-basalt, and it may be safely assumed that there was a trace of calcium carbonate made available to the ferns direct or by the agency of the water coming in contact with the rock. Incidentally this illustrates the complications of botanizing on mountains.

Among the igneous rocks of Scotland serpentine must be given special consideration. There are many exposures of it besides that at Cabrach in the same part of Scotland. It is a modified igneous rock of varied composition usually con-

taining magnesia, iron and calcium carbonate. There is evidence that it can support lime-loving plants. In England it occurs in quantity in the Lizard peninsula; and in a few isolated places there, where it is suitably exposed, such plants as *Geranium sanguineum* and *Thalictrum minus* have been observed. In considering the conditions obtaining at any particular place the presence of water is a factor which must be borne in mind.

Asplenium adiantum nigrum serpentini was discovered at Cabrach in 1862. The rocks there may not have been much visited by botanists before that date, as there is no mention of Cabrach in the Botanist's Guide to the Shires of Aberdeen, Banff and Kincardine compiled in 1860 by Dr. Dickie. (It was as a compliment to him that *Cystopteris Dickieana* was so named.) But there are references to plants on serpentine where that rock occurs elsewhere. The habitats given for *A. viride* are:—Craig of Lin Mui, near Ballater: rocks in Corrymulzie near Castleton: cliffs of the "Lion's Face": Glen Callater rocks: limestone rocks and débris, north base of the Mourne above Castleton: rocks behind the farm of Tomintoul at Castleton. Serpentine is not mentioned as occurring at any of these habitats. The limestone is older than that of the Carboniferous period.

P. GREENFIELD.

MENDELISM IN FERNS AT THE JOHN INNES INSTITUTION

The following article, by the late Dr. F. W. Stansfield, is reprinted from Vol. V, No. 8, June 1927, of the "Gazette."

We have received a copy of a paper (reprinted from "Hereditas," an international scientific journal published in Sweden) by Miss Irma Andersson of the John Innes Horticultural Institution, Merton, Surrey, which will be of interest to fern growers both from the scientific point of view and, perhaps still more, as an illustration of the cultural methods employed by Miss Andersson. There is nothing unexpected in the fact that the characters of British fern varieties are inherited on Mendelian lines as are the characteristics of practically all the higher plants and animals so far as has yet been investigated. Some of the facts brought out in the course of Miss Andersson's experiments will, however, be a little surprising to some of our readers. First of all, with regards to methods of culture:—The spores are sown not, as a

rule, on soil, but on a thin layer of agar-agar jelly moistened with Knop's solution in petri dishes. These petri dishes are small flat glass dishes about half-an-inch deep and two or three inches in diameter, having closely fitting flat glass lids. The sowing is done in a small special room, with glass walls and closely fitting glass doors, which is regularly sterilized every day. The tables are glass covered and kept scrupulously clean, while all instruments are sterilized before being used. The agar jelly has the advantage over soil that it is transparent, and therefore the whole dish and its contents can be examined under the microscope and every detail of structure and development can be kept under close observation. We have visited the Institution and inspected the processes of culture. Some petri dishes, said to be "very old," were examined and found to be full of prothallia mostly showing primary fronds of the sporophyte generation. There was not a trace to be seen of confervæ, protococcus, protonema of mosses, hyphæ of moulds, nor foreign growths of any kind—nothing but fern prothallia with incipient fronds growing upon the clear transparent jelly. We quote now from the pamphlet:—"In order to ensure cross fertilization each single prothallium is transferred to a separate petri dish and it can, of course, be seen when the archegonia are ready for fertilization. The petri dish is then filled with Knop's solution and prothallia with antheridia of the proposed male parent are added. Twelve hours is usually long enough to effect fertilization. The solution with the male prothallia is then removed. The hybrid usually appears a week or two after, and, when the roots and cotyledon are well developed, it is transferred to soil. The prothallium of *Polystichum angulare* and *Scolopendrium vulgare* is, at first, either male or asexual. This stage is followed by a period of growth, after which the archegonia appear at the usual place. When the archegonia are ready for fertilization the antheridia are, as a rule, empty. This applies to the normal, regularly formed, more or less heart-shaped prothallium. It is, therefore, often necessary to keep a prothallium for a considerable time in order to secure self-fertilization as new lobes or outgrowths must develop which are covered with antheridia."

Experiments with *Polystichum angulare*.

Spores were sown from a plant of *P. a. inæquale variegatum*, the object being to investigate the phenomena of inheritance of variegation. In the first instance the spores were sown on soil and a family was raised consisting of 158 plants of *inæquale variegatum*, 50 plants of *P. a. congestum*,

63 plants of *P. a. grandidens*, and 14 of *P. a. grandidens congestum*. These numbers correspond closely to those which would be expected upon Mendelian principles supposing the spores sown to have been from a cross-bred plant in which the *variegatum* character, with normal outline, was dominant, and the *congestum* and *grandidens* characters recessive and consequently concealed. The ordinary amateur or commercial raiser of ferns for garden purposes would at once suspect that stray spores had somehow got into the sowing, and this was our own idea upon first reading the account of the experiment. We all know how readily stray spores will filter in, apparently from nowhere, often of other species than the one sown and not unfrequently when no plant of the kind is known to be in the neighbourhood. Almost every raiser of ferns from spores has met with perplexing experiences of this kind. In the experiment in question however *no other species than the one sown* appeared and there were no "weeds" such as confervæ, mosses or moulds, which was strong evidence that the precautions taken to exclude foreign spores had been effective. The Mendelian proportion of numbers was also significant. In order to make assurance doubly sure another experiment was made, in which one sorus at a time was picked off the frond under a microscope. Then one single sporangium, unopened at the time, was dissected out by using absolutely sterile needles. The single spore-case was then transferred with the needle to a sterile hollow glass slide and was immediately scrutinized on all surfaces to ascertain that no spores from other sporangia adhered to the wall or the stalk. A sterile glass ring was then put round the sporangium and a sterile cover-slip was put over the ring. The cover-slip was slightly heated so as to induce rapid bursting of the sporangium. When this had taken place the glass ring and cover-slip were carefully removed and the, now free, spores transferred to dishes of agar. The whole procedure took place in an otherwise empty room which is regularly disinfected and affords absolutely sterile conditions. Afterwards the agar dishes were kept in a greenhouse on a table isolated by strong disinfectant, the dishes being kept shut. In this experiment the spores from 24 sporangia were sown on agar, the contents of each sporangium in a separate dish, and the prothallia were allowed to fertilize among themselves. Each sporangium, so prepared, gave the four types of ferns as in experiment 1, and in similar proportions. When the spores from these four types were sown separately and allowed to fertilize themselves it was found that the dominant type (*inæquale variegatum*) again gave rise to a smaller proportion

of types 2, 3 and 4, but when the recessives *congestum* and *grandidens* were sown they either bred true or gave type 4, i.e. *grandidens congestum*, the dominant being entirely eliminated. All this is again exactly what would be expected on Mendelian principles. The only possible explanation of these results is that the spores originally sown were from a cross-bred plant in which the *variegatum* character and normal outline were dominant, while *congestum* and *grandidens* were recessive and therefore concealed. Had spores from the original *wild-found* plant of *inæquale variegatum* been sown they would, doubtless, have either bred true or have given a proportion of normal *angulare*. A number of experiments were made by crossing different varieties of *Scolopendrium vulgare*, most awful-looking mongrels being produced in some cases (especially where *peraferens* was one of the parents), but always the results were on Mendelian lines and the most complicated mongrels could be resolved into their constituent varieties by breeding and selection. It is found in this species that branching is recessive to non-branching, dwarfness is recessive to tallness, undulation is recessive to flatness; but murication of the upper surface is dominant over the smooth surface. Margination (of the under surface) is also dominant to smoothness.

In *Athyrium filix-fæmina*, apparently, a cross-bred parent, containing the elements of *kalothrix*, but not showing any *kalothrix* character, had been obtained, since, from a ragged-looking *laciniatum*, the forms *kalothrix laciniatum*, *kalothrix cristatum* and *kalothrix-Craigii* had been obtained. It is evident that the thin translucent *kalothrix* character is recessive to the thicker texture of other varieties. The late Mr. Druery had a similar experience when, in trying to obtain a crested *kalothrix* by sowing together *kalothrix* and *percristatum*, Cousins, he obtained, apparently, nothing but *percristatum*. Afterwards however a seedling *kalothrix cristatum* came up self sown in his fernery, and he logically concluded that at least one of *percristatum* seeding must have contained *kalothrix* "blood," or more properly, *kalothrix* determinants in the germ plasm.

The common or garden raiser of ferns will be able to learn several valuable lessons from Miss Andersson's experiments, and, perhaps still more, from her methods of working. It is obvious that, by using precise scientific methods and with the assistance of the microscope, it will be possible to exclude weeds and stray spores from sowings. Also it will be practicable to obtain fertilization of the archegonia and

production of fronds from prothallia more quickly and more certainly. The crossing of varieties and the hybridization of species will become almost as easy as in the case of orchids and other flowering plants, and it may become possible to raise from spores varieties and species which have hitherto resisted this method of propagation, such as *Lastrea remota*, *Asplenium*, *Ad.-nigrum microdon* and *Asp. trichomanes confluens*. In short, in all cases of difficulty of propagation it will be easier to ascertain the cause and consequently to surmount the difficulty.

Readers who are unfamiliar with the work of Gregor Mendel may with advantage read a little book on "Heredity in the light of recent research," by L. Doncaster, M.A., published by the Cambridge University Press, in which the subject is succinctly explained.

F.W.S.

ASPLENIUM VIRIDE AND A. TRICHOMANES.

Mr. Greenfield's article in the Winter 1955 issue of the *Gazette* under the above heading, regarding the dissociation of *Asplenium trichomanes* and *A. viride*, and the preference of the latter fern for lime, brings to mind some habitats which are pertinent to the discussion.

One colony showing a very close *association* of the two ferns, is on a high stone bridge over a turbulent mountain stream, in a glen near Crieff in Scotland, at an altitude of 800-900 feet. The sides and under the arch are festooned with *Cystopteris fragilis*, *A. trichomanes*, and *A. viride* growing in profusion in the mortared joints of the stonework, and the two spleenworts show no desire to avoid each other's company. During the Society's Excursion in 1955, two more instances of these ferns in close association were noted by me in the grikes on Hutton Roof.

On only two occasions have I found *A. viride* growing luxuriantly with 6 inch fronds, and in both cases the habitats would appear to be acid, and very different from those described above. One was a wooded ravine at sea-level near Inverness, a fern paradise where I found 17 species of ferns. *A. viride* grew on a narrow ledge of rock, over which water dripped constantly, and its root-run consisted of a very thin layer of fine, black, peaty soil which had accumulated on the ledge with the passing years.

The other habitat, in many ways similar but at an altitude of 1,000—1,200 feet, was found while hunting for *Cystopteris montana* in Glen Lochay, near Ben Lawers. A narrow corrie or ravine has been cut deep into the side of a hill by a mountain torrent, and while scrambling up the bed of this stream, a small recess was found formed by overhanging rock, and completely blanketed with a luxuriant growth of spagnum moss. Suspended from the roof of the recess on long thin stems, some over a foot in length, growing out of the moss, dangled several green rosettes, which on closer inspection were found to be *A. viride*. One wonders how many years it must have taken the plants to grow such long stems.

The conditions prevailing in these habitats would seem to indicate an entire absence of lime, but the ferns were growing happily, and certainly with a vigour far surpassing that of specimens growing in what we regard as more normal conditions.

J. W. DYCE.

FERN GOSSIP

At the top of page 176 in Vol. VIII, No. 7, of the *Gazette*, our previous number, a note is made of a "mystery fern," self-sown in a pot in my former greenhouse: and stated to be an alien.

It has now proved nothing of the sort and is in fact an *Asplenium Trichomanes*. This correction is made now as an example of the unwisdom of identifying a fern in a young state.

As an alternative to a greenhouse, which I do not now possess, a large frame was secured at a sale early in December last year, and all my more tender ferns and many others were put in it, in pots.

The result has been excellent: thanks partly to a mild winter, but also to the ease with which frost can be guarded against.

The position chosen is facing north and west, at an angle of the house sheltered to the east and south.

Coverings were put on at night when frost was possible or certain, and only left on by day on one or two occasions.

New growth began in several cases in March and was evident in all at the beginning of April: and we recommend

this plan of a frame most whole-heartedly to anyone who wishes for plant protection. I would now rather have two frames than even a small greenhouse.

During the past year, a number of fronds have been received, from various sources, for identification; several of these have been abnormal or off type.

It cannot be said that these were, or would become, varieties: but they show that forms occur often enough to make careful inspection of even common species, worth-while. One or two complete (rooted) plants sent, are being grown on for further examination.

If difficulty in cultivation is found by the possessor of *Dryopteris aemula*, it may be found worth while trying a pot plant, under glass: using light, open, sandy soil, with well-decayed leaf mould if available, and giving plenty of water except during frost: with some reduction from late autumn till late winter.

OUR FRONTISPIECE

This, from a splendid photograph by Mr. Lovis, has been chosen by our Printers as more suitable for reproduction than another, of an Epiphyte Fern, *Microsorium diversifolium*. We agree with the choice, as it gives a good idea of the Fern wealth to which Mr. Lovis refers: and of the climate which makes *Todea* able to grow in the open air. With us, it has to be a greenhouse plant, and owing to its size, very limited in number.

The *Microsorium* is an example of how plants sometimes overcome the housing problem.

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Botany
VOL. VIII

No. 9

- The -
**British Fern
Gazette**

SPRING, 1958

EDITED BY

Revd. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

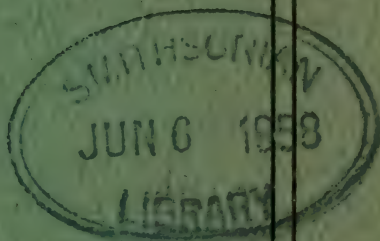
PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH PTERIDOLOGICAL SOCIETY

THE SOCIETY originated, in September 1891, in the Lake District with headquarters at Kendal. Its members are distributed throughout Great Britain and Ireland, with some in the Dominions and U.S.A. Its objects are:—

- (i) The Study of Species and Varieties of British Ferns; and
- (ii) The Recording of Information with regard to Ferns generally.

The organ of the Society is *The British Fern Gazette* published usually twice a year.

The Society is affiliated to the Royal Horticultural Society.

The Annual Meeting is held when possible at some place where ferns are abundant, and from which excursions for fern hunting can conveniently be arranged. These excursions are an important feature of the Society's activity.

Fern Fronds can be exhibited by members, and to any new fern reaching a high standard the Society will award a Certificate.

Members are invited to communicate with the Hon. Secretary on subjects of interest with regard to British Ferns. Fronds may be sent to him to be identified or named at any time.

A collection of British Ferns is being formed with the help of the Society in the Royal Horticultural Society's Gardens at Wisley.

The Committee is endeavouring to increase the membership of the Society and, through this and by other means, to encourage the more general cultivation of the varieties of British Ferns. Any lover of horticulture is eligible for membership, and the subscription is 10s. per annum (due in advance at or immediately after the Annual Meeting) which entitles members to copies of *The Gazette* and to any help the Officers of the Society may be able to give.

The Hon. Treasurer or Hon. Secretary will be pleased to supply members who may desire it with Bankers' Orders for the convenient payment of subscriptions.

Further particulars may be obtained from the Hon. Secretary:

REV. E. A. ELLIOT,

South Stoke Vicarage,

near Reading.

THE BRITISH FERN GAZETTE

NEW SERIES

VOL. VIII

SPRING 1958

No. 9

CONTENTS								Page
EDITORIAL NOTES	...	...	...	...	...	...	...	199
OBITUARIES	...	...	...	...	...	...	...	200
ANNUAL MEETING	...	...	...	...	...	...	...	204
THE 1957 EXCURSION: J. W. DYCE	...	...	...	...	...	...	...	207
DRYOPTERIS BORRERI: P. GREENFIELD	...	...	...	...	...	...	...	210
FERNS IN SUSSEX: DR. SWINSCOW	...	...	...	...	...	...	...	211
FERNS OF THE LIZARD	...	...	...	...	...	...	...	214
CULTURE OF CHEILANTHES: DR. SWINSCOW	...	...	...	...	...	...	...	215
FERNS IN STAFFORDSHIRE: T. A. DYER	...	...	...	...	...	...	...	216
SOUTHPORT SHOW	...	...	...	...	...	...	...	216
FERN GOSSIP: E. A. ELLIOT	...	...	...	...	...	...	...	217

EDITORIAL

In our Obituaries this time we record the loss of two Members whose Membership more or less coincided with their life-long interest in Ferns: and of another, a former Secretary, whose energy set our revived Society firmly on its feet in 1948.

This is a heavy loss; but their memories will remain, valued, with us.

Our Annual General Meeting will again be held at the British Museum (Natural History), Cromwell Road, London, on Saturday, September 27th, at 2.30 p.m. Members are asked to note this now, in case no further notice is sent out.

At the 1957 Annual Meeting, Dr. Swinscow exhibited a Frond of *Cystopteris Dickieana* which had been collected at the source where the fern was first found, near Aberdeen, over 100 years ago. As, in the past, this species has been somewhat over-collected, it is good to know that it is not extinct.

The President remarked that it is also known from Spain, Greenland, and the Himalayas.

Such a range would, one supposes, give it definite rank as a species, a status to which it is raised in the new British Flora, by Clapham, Tutin and Warburg.

The first volume of illustrations to this Flora has been

published (Cambridge University Press, 25/-) and, following the plan of the Text, Ferns are included.

A few of the larger species may be thought to be on too small a scale, but this is inevitable as that (the scale) must be adhered to throughout.

But in all cases, the details are admirably drawn; pinnules, sori, veining and so on: and will further be found most helpful by anyone who wishes to pass on beyond Cryptogams to flowers.

At any rate, those of us who already possess the text should, if they have not done so, lose no time in having a look at this excellent work—and in acquiring a copy, as we feel sure they will wish to do.

It is expected that the Annual Excursion will be held in Devon this year: the date fixed at present being from September 6th to 13th. The place has not yet been arranged, and we ask Members, who wish to attend the Excursion, to inform the Secretary at once.

Details will then be sent, but only to such Members who apply.

Many subscriptions are still unpaid, and Members are reminded that the amounts due should be forwarded immediately to the Hon. Treasurer.

OBITUARIES

SAMUEL PRYCE ROWLANDS

Dr. S. P. Rowlands, one of our senior Members, died at Doncaster on the 7th of December, 1957. He was seventy years old.

Dr. Rowlands was living in London when he became a Member in 1913, having just completed his medical training at King's College. After the outbreak of war in 1914 he served with the British Red Cross in Serbia and later with R.A.M.C. in Palestine. His health suffered considerably as a result of the hardships experienced in these areas; but tedium was relieved to some extent by his botanical interests. He gives an account of his fern hunting in Serbia in the December, 1915, number of the *Gazette* (Vol. III). After the war he went into general medical practice at Cardiff, and his botanical enthusiasm led to his acquiring an extensive knowledge of the flora of South Wales. Apparently he worked as far as Tenby, as, some years later, he gave Dr. F. W. Stansfield and the writer a habitat near there for *Thelypteris palustris*. After about five years at Cardiff he moved to Doncaster, where he had a busy practice which in his last few years left him with little leisure. From Doncaster he was

able to apply himself to the flora of North Wales, where the limestone of the Great Orme is particularly interesting; and he paid occasional visits to the Lake District. After visiting South Wales for a holiday in 1934, he contributed to the *Gazette* an exhaustive account of *Adiantum Capillus-veneris* in Glamorgan. An abnormal specimen of this fern which he collected was interestingly imbricate.

This knowledgeable and hard-working doctor was always ready to help the Society; and no one appreciated this more than the equally busy Dr. F. W. Stansfield. When F. W. S. was editing the *Gazette*, it often fell to him, as it did to C. T. Druery before him, to write all the articles for the *Gazette* himself.

Occasionally when badly pressed, he would appeal to Dr. Rowlands for a contribution and never appealed in vain.

The writer had some interesting correspondence from Dr. Rowlands from time to time, and we exchanged some plants.

In 1934 he sent a division of his plant of *Aster linosyris* (from N. Wales) which is still living; and further valued presents were a *Cystopteris fragilis* from Cader Idris and *C. alpina* from Styria. It will be evident that the doctor was not deterred by distance from pursuing his favourite hobby. On a holiday before he took up medical work, he visited America and met a number of American botanists.

Dr. Rowlands was a member of the Botanical Society of the British Isles and the British Bryological Society. At one time he was a member of the Northern Ecological Association.

A visit was paid to the doctor by J. W. Dyce and myself on our way to Ingleton for a week's botanizing in June last. Though pressed for time he showed us everything in the garden, where all the plants were of botanical or special horticultural interest. Small ferns and alpine were under glass, partly as a protection from occasional smoke coming from Doncaster factories. The doctor was full of his plans for moving to Southall, Middlesex, where he intended to reside after retiring this year. In September he came to the Annual General Meeting—it may have been the first which he ever attended; and we all looked forward to being in constant close touch with him after his retirement.

P. GREENFIELD.

HAROLD GODDARD RUGG

(Grateful acknowledgment is made to the American Fern Society for their permission to extract information from the *American Fern Journal* for this Obituary.)

The Society learned with regret of the death, on the 13th February last year, of one of its oldest members, Harold G. Rugg.

He joined the Society in 1909, probably as a result of publicity given to the first issue of the *British Fern Gazette* in that year, but does not appear to have been able to come to meetings of the Society before that of 1939, held at Chard, Somerset. He had, however, intended to be at the Meeting of 1938, but owing to illness was unable to cross the Atlantic. He was in occasional touch with us by correspondence but it was not until 1954 that we saw him again. In that year he came to the well-attended Meeting of the Society held at Barrowdale in the Lake District. He joined in our excursions so far as his strength would admit, and was much impressed by the scenery. On this visit he said he would probably not be able to visit Europe again, but knowing his enthusiasm we were not altogether surprised to hear that he proposed to come again in the Spring of 1957, when he particularly wanted to see Spring flowers in bloom and to visit Holland at tulip time.

Throughout his long membership Rugg's address has been the Dartmouth College Library, which must have been to him like a home—a beautiful building in the grounds of the College at Hanover in New Hampshire, U.S.A. He was Librarian to the College, and was an expert on rare books. His unremitting services were honoured on more than one occasion by the College, and before he retired in 1953, after 48 years service, he had been made Associate Librarian with the rank of full professor.

Rugg's energies were not confined to his College duties. The history of his native state, Vermont, was a major interest in his life, and he achieved national recognition as an expert in this field. But it was as a lover of plants, chiefly alpinists and ferns, that he was known to us. He joined the American Fern Society in 1906, and became an extremely active fern hunter, with many rare ferns to his credit. Only a short time before his death he had been elected Vice-President of the Society.

The few of us who came to know him had a very real liking for this tall quiet American with his kindly ways, and his enthusiastic interest in our ferns. This interest led to many requests for fern plants and spores, and we like to think that we were of some service to him in supplying his wants. Needless to add, we were more than repaid, and our collections are the richer for many interesting ferns sent from America. Closer touch was kept with the writer after his 1954 visit, and his letters were always full of visits to

gardens, and of his fern and botanical trips. They were a joy to read even though his handwriting was extremely difficult to decipher! His proposed visit to Europe in 1957 was planned for the early Spring, to allow him to return home in time for the Spring flowering of his garden, which he loved. The number of plants which found their way there from this side of the Atlantic alone, must be impressive. But once a man is seized with the love of plants, it is a solace for the rest of his days, and Rugg's life must have been blessed accordingly.

His garden was left to Dartmouth College, but they are unable to maintain it, and the rare plants have been distributed to institutions where they will receive adequate care.

J.W.D.

JAMES ROBERT PULHAM

It was distressing news that J. R. Pulham died on the 20th of April, 1957, as the result of an accident. He was 84 years old.

Pulham's services to the Society were such that they should not pass without record.

It will be recollected that, as a result of the outbreak of War in 1939, the Society's activities were completely suspended. Any matters affecting the Society were provisionally dealt with by the President, the Editor and the Secretary. After the war, in the course of many discussions with the President, the writer suggested to the President that, as he had not fully recovered from illness during the war, it might be well in the interests of the Society if the Secretaryship could be transferred to someone with more physical energy, offering of course to do everything possible to assist a successor. As a consequence the President nominated J. R. Pulham. Admittedly this was a surprise. Pulham was not a member, and he had no detailed knowledge of ferns—which would have been a handicap to him in the long run. But as it turned out his appointment was most fortunate for the Society.

Pulham was an Associate of the Institute of Landscape Architects; he had inherited the well-known firm of Pulham and Son; and among other work with which he had been concerned was the massive Rock Garden at Wilsey. He had been Secretary of the Alpine Garden Society for many years, and Secretary of the Horticultural Club.

During the war the Society had lost no fewer than seven of its officers, and even after the Committee Meeting of the 19th of January, 1948, when Pulham was appointed, the President (Cranfield), normally indomitable but fully conver-

sant with the difficulties resulting from the war, wavered on the question whether it was possible to reconstruct the Society. However, his hesitation was only momentary.

At this point Pulham and I joined forces. It was reassuring to find that he showed the utmost determination to re-build the Society. He could not have been keener if he had been one of our oldest members. And he was most co-operative. Hardly had Pulham familiarized himself with the Society's needs than we were placed in a position of much difficulty by the President's death on the 29th of May, 1948. Pulham, however, was undaunted; and we formed ourselves into a working party of two, based on his small office in London, where we had frequent meetings. Pulham's long experience and energetic methods were exactly what was needed in the circumstances. No account of what was done can be given here; but it is impossible to refrain from mentioning the valuable help and encouragement given to us by the Botanical Department of the British Museum (Natural History) both at this juncture and subsequently.

In pursuance of a decision of the Committee, it was arranged to issue a *Gazette*, to follow that of July, 1939; and Pulham put the work into the hands of the Printers, who have since served us so well. The Society was once more in working order. Mr. Robert Bolton became President.

Mr. Bolton died in March, 1949. Fortunately it had now become possible for Mr. Alston to take the Presidency, and the series of crises which Pulham met had come to an end.

At the end of September, 1949, Pulham had to undergo a severe operation, to which he would probably have succumbed but for his strong constitution. I was given access to his Office and hoped to carry on the Secretarial work until he recovered. During this period help was increasingly given by the Editor, Mr. Elliot. Pulham was able to resume in March, 1950, but in July had to have another operation, and was ordered six months rest. He decided that he must resign; and Mr. Elliot was appointed to succeed him.

P. GREENFIELD.

THE ANNUAL MEETING, 1957

The 54th Annual General Meeting was held on September 21st, 1957, at the British Museum (Natural History), by kind permission of the Trustees.

The President took the chair, and there were present Mrs. Healey, Mrs. Dyce, Mr. P. Greenfield, Dr. Rowlands, Dr. Swinscow, Messrs. Crabbe, Dyer, Healey and Robinson and the Secretary.

General pleasure was expressed at such a large meeting.

The Minutes of the 53rd meeting were passed and signed. Mr. Alston was then unanimously re-elected President.

He proposed the re-election of the existing Vice-Presidents, also the Committee, this was agreed to, with the addition to the latter of Mr. J. A. Crabbe.

The Hon. Treasurer, Auditor and Secretary were also re-elected.

SECRETARY'S REPORT

The Secretary's report was as follows:—

It was a disappointment to hear nothing in or about March of Mr. Harold Rugg's coming to England, and a great sorrow when this was found to be due to his death. He was one of our most long standing Members, and one of the keenest up to the last.

Others have been lost by death or disappearance; we regret this also. Our numbers are, however, much the same, owing to new Memberships.

Combined activities by the Society include, since our last Annual Meeting, the 1956 Excursion, reported in the last *Gazette*, and that of 1957, of which there will be an account in the next issue, and which was one of the most successful in recent years.

Individually, Members have been active at various times, and we can claim that we are not only as vigorous as ever, but fulfilling our object of being helpful to many in and outside of the Society: this having led to more than one addition to our numbers.

This can be counted as amongst the best individual contributions, and is probably more successful and permanent than advertising, sometimes advocated.

TREASURER'S REPORT

Mr. Dyce's report as Treasurer followed. Briefly he said:—

The financial position is satisfactory, although it will be noted that our balance has dropped. This is due to the fact that the cost of two issues of the *Gazette* had to be met this year. Income has come in well, and includes some donations, but nothing from the sale of old *Gazettes*. Printing expenditure has risen as foreseen, but not unduly so, and the costs of the two *Gazette* issues shown in the Financial Statement below are very reasonable in the prevailing circumstances. Postal expenses have also gone up, due to the increased charges.

Mr. Dyce proposed and Dr. Rowlands seconded the election as new Members of:— Mrs. B. E. G. Allen, Mr. J. French, Mr. E. T. Ironside, Mr. H. J. Marchant, Mr. J. V.

THE ANNUAL EXCURSION, 1957

At Wellington, in 1956, it was obvious that North Somerset could provide good hunting for a much longer period than one week, and before we left, we definitely decided to return in 1957. And so, Saturday, 31st August, found our party assembled at the White Hart Hotel in Wiveliscombe, looking forward to another interesting week fern-hunting. It was disappointing to find that only four Members were present, the Rev. E. A. Elliot, Messrs. Greenfield, Robinson, and myself.

We planned to concentrate our hunting on the Brendon Hills and the Quantocks. For this purpose Wiveliscombe made an excellent centre, with roads giving equal facility of approach to both areas. The Brendons contain a maze of small deep valleys, all beautiful, and most of them wooded and ferny. Our previous visits had acquainted us with only a few of these valleys, but they had intrigued and fascinated us with their possibilities, and we wanted to know more about them. The Quantocks are very different, being a long ridge with steep wooded combs cutting deep into its flanks. Again only a few of these combs with their abundant fern populations were known to us, and there was much more ground to cover.

In my account of last year's Excursion, I stated that our best day was spent in the Brendon Hills. Perhaps it was the memory of that day which led us to decide unanimously to start off our week in that same deep valley which had provided such good hunting. It did not disappoint us. Before lunch we had found an excellent *Polystichum angulare acutilobum*, which I think will prove first-rate under cultivation, also a colony of *Asplenium trichomanes bifidum*, in the midst of which was a clump of the same fern, normal in all respects except that its fronds were exceptionally large. I note that Lowe records a few finds of a similar form, which he calls *majus*. The plant was collected, and it will be interesting to see if it preserves its size.

These finds made an exciting start to the Excursion, and by no means exhausted the interest of this valley, in which we found 14 species of ferns, among them *P. angulare*, *Dryopteris aemula*, *Thelypteris oreopteris*, *Ceterach officinarum* and *Athyrium filix-foemina*, the latter vying with *D. dilatata* and *Phyllitis scolopendrium* for the distinction of being the most abundant fern. The *Scolopendriums* were magnificent, and one wooded slope was covered with large specimens, among which we discovered several with their fronds outlined with narrow dark maroon margins. The suggestion of mourning in this peculiar development

inspired our Editor to name them *maerens*. This part of the wood also contained a fine colony of large-growing *D. borrieri*.

It was too much to hope that the standard of our first day could be kept up, but on the following one we again set out eagerly for the Brendons, making Monksilver our centre, and once more fortune smiled on us. Our prize was a small plant of *P. angulare*, with several crowns, struggling for life in a dry bank. Frond apices and pinnae were all neatly and regularly crested, and when well-grown in cultivation this fern should prove an acquisition to the fern garden. *P. angulare* predominated to-day, and many interesting plants were seen and some collected. The hunting was so good that we were unable to cover all the ground, and another day was devoted to the area. But now the weather, which up till now had been fine, deteriorated, and we finished hunting the Monksilver lanes in rather wet conditions. No finds rewarded our efforts except one which had been noted, but not collected, on the previous day. To reach it a "short cut" (according to our maps) led two of our party through half a mile of drenching bracken, and down a muddy sunken lane overgrown with nettles and brambles. We returned to the car, scratched and stung and soaked through, but we got our fern, which we hope will prove worthy of our efforts to collect it.

One more day at the end of the week was spent in the Brendons, when we hunted further to the west in the Withycombe district. Ferns were everywhere, particularly *P. angulare*, but the plants presented all too normal an appearance, and no variation was seen. In fact, after the first days our luck turned, and no more finds, even of a mildly interesting nature, came our way. The weather did not help, for we had two days of heavy rain, which made hunting almost impossible. We used one of these wet days to pay a visit to a locality in the flat country beyond Bridgwater, where *Thelypteris palustris* is to be found. We did not need to search far, for on either side of the road, and easily visible from the car, we found the fern growing abundantly and extensively over several acres of moorland. The Royal Fern, *Osmunda regalis*, is also recorded from here, and the rain was ignored for a short time until we found one magnificent plant flourishing in some wet woodland. The dominant carpet plant was *T. palustris*, over which, here and there, *D. spinulosa* lifted its tall graceful fronds.

Our successes in the Brendons led us to devote more time to this hunting-ground than we had intended, with the result that the Quantocks were badly neglected, and only one day was spent exploring their steep combes. Unfortunately this

was our second very wet day, and the rain rather damped our ardour. During the few dry spells we did manage to do a little hunting, and one wooded ravine gave us a magnificent display of very large growing ferns—*P. angulare*, *D. filix-mas*, *D. borrieri*, *D. dilatata*, *A. filix-foemina*, and *Phyllitis scolopendrium*. All, however, were quite normal. Other combs and some of the steep lanes on the west side of the hills were looked at, and *P. angulare* was found to be abundant, many plants showing slight variation. Given a good day, we should have had some good hunting here.

This year we confirmed last year's findings that 16 fern species can be found in North Somerset. We did in fact record 18 species this time, but the two additions, *Osmunda regalis* and *Thelypteris palustris*, were found beyond Bridgewater, outside the region under discussion. The common species are *Polystichum angulare*, *Dryopteris filix-mas*, *D. dilatata*, *Polypodium vulgare*, *Phyllitis scolopendrium*, and *Athyrium filix-foemina*. Of these the most abundant are *P. angulare* and *A. filix-foemina*, the former being wide-spread over the whole area, yet with sharply defined gaps in its distribution. It was noticed that we could suddenly leave *angulare* behind and travel for some miles with scarcely a plant of it to be seen, then as suddenly come upon it again in its customary abundance. This fern is never very much in evidence in Lady Fern country, and vice versa, with the exception that among the *Athyriums* on some of the shaded hillsides can be found very large fine specimens of *P. angulare tripinnatum* and *sub-tripinnatum*.

Dryopteris borrieri is widespread, but not common except in some favourite localities where it makes a fine show; one scattered colony of *D. aemula* was seen, and also a few plants of *D. spinulosa* with *D. dilatata* characters. *Thelypteris oreopteris* was found sparingly in a few places, and in only one small area did we find *Polystichum aculeatum*. *Blechnum spicant*, *Asplenium trichomanes*, and *A. adiantum-nigrum* are locally common, and wherever there is a stone bridge with a suitable exposure, there *A. ruta-muraria* flourishes in the crevices of the masonry. Last year I reported that *Ceterach officinarum* was uncommon, but this year we found it on stone walls in most of the villages we passed through.

Again our time sped all too quickly, but this year we returned home more satisfied with our hunting, and taking with us some worthwhile plants.

J. W. DYCE.

DRYOPTERIS BORRERI

A few years ago a plant of a slightly off-normal, but common form of *D. filix-mas*, which should perhaps have been thrown away as uninteresting was put into an odd corner of the garden in half shade. The soil is poor and shallow over chalk, but near the fern was fairly moist. The fern grew to no great size but flourished, and after a time produced fronds at one part of the crown which had more or less rectangular pinnules, suggestive of *D. borrieri*. When fronds of each type were shown to people who were not told they were off the same plant, they pronounced to be *filix-mas* and *borrieri* respectively. This plant is not now in the writer's possession.

In August, 1955, the writer came upon a remarkable lane in Surrey with banks perhaps up to twenty feet high of sand darkened by leaf-mould and sloping so steeply that in places they were held up only by the vegetation—a few trees and bushes by which the lane was shaded. The lane ran through an extensive area of moisture-retaining sand. This natural fernery was peopled chiefly by *filix-mas* of somewhat off-normal types. One large *filix-mas*, some eight feet up a steep part of the bank was noticed to have on one side of it fronds suggestive of *borrieri*. It was obviously desirable to keep a watch on it. When visited the next year the *borrieri*-like plant of the clump had increased in size to equal the older part. The ferns were being overgrown by brambles; and several of the shoots were cut away to allow the fronds to develop without damage. Putting a hand below the "*borrieri*" (very carefully in view of the precarious position of the ferns on the sandy slope) a stock could be felt which seemed to run nearly horizontally towards the stock of the *filix-mas*. As the ferns were flourishing better than they were likely to do in a garden, unless given first-class cultivation, they were left *in situ*, pending further developments.

On a visit in May of the next year, there was *borrieri* showing its characteristic and beautiful colour. On a further visit the colour, as is usually the case, had become deep green. Some of the fronds appeared to have been deliberately damaged, and it was considered desirable to remove the ferns. This, however, was not a one-man job, and it was carried out at a later date with the help of Mr. J. W. Dyce. We found that the long stock of the *borrieri*, bare for some distance below the crown, ran down to the base of the *filix-mas* stock where there was some intermingling of roots. The *filix-mas* itself had two stocks. One of these and the *borrieri* will be taken care of by Dyce; but it may be some time before they recover from the shock of removal, although we exercised

great care. It was disappointing that the evidence of possible outgrowth of *borreri* from *filix-mas* was inconclusive. Such outgrowth might be by offset or bulbil. Normally a fern originating in this way is a faithful reproduction of the parent, and of equal vigour. Very slight differences only are believed to have been observed in offsets. As regards bulbils, some information given by C. T. Druery is of interest. In an address to the Society in 1895, he stated that bulbils are of two classes, patent, i.e., visibly developed upon growing ferns and latent, i.e., making their appearance only when the central axis of growth is destroyed and new centres are developed in their place by outgrowths, which first appear as bulbils At the base of each frond of most *Lastreas* there are latent buds, which push out into plantlets if the fronds be severed low down and kept close Bulbils may usually be relied upon to produce true plants, but not always.

The type of *filix-mas* in the above cases, and in two or three other suspected cases, is one growing in damp and shady places. It is not uncommon and may be Thomas Moore's "incisa," but it is difficult to collate his descriptions with ferns growing in the wild.

Dryopteris borreri—known to the Society since the time of Woollaston as *Lastrea pseudo-mas*—is an extraordinary fern, particularly in so far as it is apogamous. Apogamy, both natural and induced, has been the subject of scientific research over the years, and there is an interesting short account of recent research up to 1950 in Dr. Swinscow's article headed "Evolution in Ferns," in the *Gazette* of 1953 (Vol. VIII No. 3). In this *D. borreri* receives special attention.

Apogamy in *borreri* is an alteration in the machinery of growth involving vegetative reproduction externally. At a guess it might be expected that the fern originated in an abnormal way. Some light on this might be thrown if the foregoing conjectures have a basis of truth.

Further research in the field is necessary, but may not be easy, as such occurrences are likely to be rare and would need to be detected in an early stage. No doubt members hunting for varieties will bear the matter in mind.

P. GREENFIELD.

FERNS IN SUSSEX

In clear, warm, summy weather about fifty Members of the Botanical Society of the British Isles met at Tunbridge Wells in the morning of September 28th, 1957, to study ferns in the field. All told, eighteen species of fern were seen, more than one-third of the number native to Great Britain. We

were uncommonly fortunate in the weather, for it had been cold and wet for some weeks previously. The party travelled from place to place by coach, and in several private cars.

Our first stop was Saxonbury Hill, to which we had access by kind permission of the Marquess of Abergavenny. The outcropping sand-rocks there, as elsewhere in Kent and Sussex, provide an ideal habitat for *Dryopteris aemula* and *Hymenophyllum tunbrigense*. Both were in fine form and bearing plenty of fruit. *D. aemula* is more abundant in the Weald than anywhere else in Great Britain, except in the extreme south-west, and the colony we saw was obviously thriving, with many young plants. On the rocks among the *D. aemula* the *H. tunbrigense* was spreading in a healthy manner. This fern sometimes extends to the limits of a boulder or damp cliff face and then dies off in the middle, finally falling away in patches; it may then grow over the boulder again.

A bog near the sand-rocks had *Dryopteris spinulosa* growing in it, and Members were able to examine not only the unstriped scales but also the distinctive soft, yet brittle snap with which fronds can be broken off. So characteristic is it to an experienced hand that a blind man could identify the fern by that feeling alone. On the banks of the paths in the woodland, *Thelypteris oreopteris* grew in large numbers. This fern is uncommon in eastern England, and exceedingly rare in the eastern counties north of London. It needs a humid atmosphere to thrive, and even in the west is more commonly found by streams than away from them. Fine plants of *Athyrium filix-femina* were seen in boggy ground, and also *Dryopteris filix-mas*, *D. borrieri*, and *D. austriaca (dilatata)*. Another plant uncommon in the eastern counties north of London is *Blechnum spicant*, but this too was plentiful at Saxonbury Hill. Finally, the pernicious weed bracken was much in evidence.

The party ate their sandwiches in this delightful wood, though a small group of seasoned campaigners are believed to have made merry in a near-by public house. At any rate, the party had attained some cohesion again by the time we reached our next stop, a small valley at Calkin's Mill, a few miles away. Here we were able to see some large plants of *Polystichum lobatum (aculeatum)* in the deep shade of a thick hedge bank, *Phyllitis scolopendrium* in the mortar of a bridge, and the hexaploid variety of *Polypodium vulgare*.

We then travelled for about a dozen miles to the Ashdown Forest, the furthest point of our route, and there walked out on to a wide expanse of peaty common with much heather. On a damp patch here the interesting and uncommon

fern ally *Lycopodium inundatum* was growing profusely and its club-shaped fruiting stems. In a ditch half a mile away a few members examined some plants of *Osmunda regalis*. Though distinctly rare outside south-west England, isolated groups of a few plants here and there are widespread. But *Osmunda* has suffered heavily from the mechanical drainage and cultivation of the last fifty years. On a bridge at this locality we saw some nice little plants of *Asplenium ruta muraria*. Hertfordshire is possibly the only county of Great Britain where this plant is rare.

Moving on a few miles to a marsh on the edge of Ashdown Forest, we saw a good stand of *Thelypteris Palustris*. This, too, is one of those plants that are widespread yet rare, again owing largely to artificial drainage. It will tolerate a fair range of pH round neutrality and a wide range of illumination from open sky to medium woodland canopy, but for all that it has the air of diminishing rather than increasing—incidentally, in the locality where we saw it.

On the way back to Tunbridge Wells we stopped at a church to see *Polystichum setiferum*. A few plants were growing in the steps and wall by the churchyard. It grows more abundantly elsewhere in this part of England, but a little too far away to include in the route. Finally some of us paused by a railway bridge to see *Asplenium adiantum-nigrum* growing in the mortar. This again is an uncommon plant in eastern England, though a feature of many hedge-rows in the west. All of us refreshed ourselves with an excellent tea before dispersing at 6 o'clock from Tunbridge Wells.

Epitomising the day's pteridological experience, one might emphasise its Atlantic character. A sight in one day of *Osmunda*, *Dryopteris aemula*, *Hymenophyllum tunbrigense*, and *Polystichum setiferum* suggests a trip to Devon rather than south-east England. But the valleys of the Weald in Kent and Sussex have a higher rainfall (over 30 inches a year) than might be expected from their geographical position; they are still well wooded; and the sandstone cliffs in some of them retain moisture like a sponge. They are thus sheltered, warm, and humid, providing ideal conditions for ferns.

The success of the expedition owed much to the excellent organisation of Mr. P. C. Hall, honorary field secretary of the B.S.B.I. D.S.

After going to press, we learn with profound regret that our President, Mr. A. H. G. Alston, has died in Barcelona. This is the only information as yet available, but we think members should be given it now.

THE FERNS OF THE LIZARD PENINSULA

Under this title Mr. H. Relton, then one of our members, wrote in the *Gazette*, Vol. V, No 3, May, 1924, an interesting contribution.

This is not now reprinted in full, but is used as a basis to which supplementary notes, made during a fortnight last summer, can be added.

Mr. Relton's chief ambition was to find *Asplenium lanceolatum*, as he had been told it was almost or quite extinct.

He began the search especially along the western coast-line, but without success. Eventually the species was found as a single plant on the East Coast at Chynhalis Point. Later, he was told of an inaccessible place where fine plants were to be seen, but not reached; and still later, he found several plants at Bass Point, noticing that the fern seemed to have a special liking for Hornblend rock.

It was also found, as a small colony, in a field-wall near Grade Church, quite half-a-mile from the coast in a direct line, and in a roadside bank on a hill, while returning from Penzance.

Mr. Relton next turned to *Lastrea* (*Dryopteris* now) *aemula*, and at last found it near Manaccan, in a lane.

He then concentrated on *Osmunda regalis*, which a local resident told him grew in several places, one being Predannack Downs.

On going there, he searched a track where it was said to grow, but saw none: so went on to Kimbro Pool and followed a stream flowing from it.

Here he found some eight clumps, and believed more were thereabouts, but could not penetrate the rough overgrowth.

In between and during these searches, other species were seen, the full list being, as he gives it: *Lastrea filix-mas*; *L. pseudo-mas*; *L. dilatata*; *L. aemula*; *Polystichum angulare*; *Athyrium filix-femina*; *Asplenium ruta-muraria* (once only, at Ruan Minor); *A. Trichomanes*; *A. marinum*; *A. lanceolatum*; *A. adiantum-nigrum*; *Blechnum spicant*; *Pteris aquilina*; *Polypodium vulgare*; *Scolopendrium vulgare*; *Osmunda regalis*.

Here these extracts from Mr. Relton's account end: but reference to other subjects in it will be made in my own notes, and it was carefully noted before my own visit.

So was John's book, "A Week at the Lizard," which Mr. Relton and I found invaluable and which has, in recent years, been described as still the best guide to the locality.

My fortnight began in mid-June and went just into July:

rather too soon for some flower species and too late for others, but nonetheless, abundant in many of the most interesting.

Mr. Relton used a bicycle, but I relied on motor-buses and long walks, all in the southern part of the Peninsula.

As nearly every day was hot, I did not look for the coastal *Asplenium maritimum* and *lanceolatum*; but expect they are still adorning their old sites.

Nor did I get to Manaccan, or see any *Lastrea aemula*.

The other ferns, except *Lastrea pseudo-mas* and *Asplenium ruta-muraria*, neither of which I saw, are abundant.

In a hedge bordering the modern drive from the main road to Kynance, there are several *Dryopteris*, which may be either *filix-mas* or *Borreri* (*pseudo-mas*), but I unfortunately forgot to collect fronds. In any case, they bore signs of weather effect, being stunted, hard, dry. One *Ceterach* only was seen, in a garden wall at Poltesco.

The track to Predannack Downs, where Mr. Relton failed to find *Osmunda*, was almost certainly discovered, and two clumps of the fern were seen: but the stream from Kimbro Pool was not then accessible, being under Government or military control.

Although abundant, the species are local in their occurrence; there are large areas where none were seen and where it would be surprising to find any.

Rare flowering plants are the great attraction, and my main reason for going there. I was fortunate, as the last few days coincided with a visit of four Cambridge Botanists, from whom I received much help and advice—and correction in some of my identifications!

The local industry is the working of the serpentine stone into ornaments or household ware, napkin rings, ash trays, candlesticks and so on. Some articles are quite large, such as clock cases; and there are twenty or more little one-man works, which seem to show at least part-time profitability.

For a healthy, happy and above all, quiet holiday—one can easily get away from the crowded parts—the Lizard can be recommended. A car, a bicycle, the motor-bus, all have their use; but to reach the most worth-while parts, lonely as they are, walking is essential, and mostly easy, though there are steep slopes and rough ravines at times.

E. A. ELLIOT.

CULTURE OF CHEILANTHES

The genus *Cheilanthes* is a large one, and probably only a small proportion of its species are in cultivation. But these include some ferns of uncommon interest or beauty. Out-

standing among them is *Cheilanthes farinosa*, dark green on the upper surface of the fronds, densely powdered white on the lower. *Cheilanthes myrcophylla* has finely divided pinnules and very slender stipes.

Both these plants grow satisfactorily in a cool greenhouse, where the humidity is fairly low and indirect light is plentiful. The compost I have found suitable consists of Kettering loam, sterilised peat, and coarse brick powder, one part of each. The last constituent is made by pounding up old bricks until a mixture of large granules and small lumps is obtained. I do not claim any special virtue for it except as a means of using up old bricks, but I think it provides better drainage than the sand obtained commercially, most if not all of which is too fine for ferns.

My impression is that these ferns need a light, airy, cool greenhouse, without scorching sunlight, and a compost that gives good drainage.

D. SWINSCOW.

FERNS IN STAFFORDSHIRE

It would be interesting to know how many species of ferns are found in Staffordshire, and the localities of the more uncommon ones.

Having resided in my village for over 50 years I have taken it for granted that only the "usual" ferns grow round and about, such as *D. filix-mas*, *D. dilatata*, *Ath. filix-foemina* and *Pteris aquilina*. For others I have gone further afield.

Having lost *Asplenium ruta-muraria*, which has proved my most difficult species, I collected several with undamaged roots, while on my Welsh holiday and on my first day at home I glanced at a brick wall and noticed that this fern was growing along the whole of the second row from the top. I had been passing this wall all my life—"Seeing, we see not."

Surely we must study our local ferns and not assume the rarer ones are absent.

T.A.D.

SOUTHPORT SHOW 1957

Last year and in 1956, the Show authorities had last-minute near-disasters: a flooded ground first, and next year a gale. But on both opening days all was normal, and as attractive and enjoyable as ever.

The two Judges of Fern Classes found a rather larger entry than usual waiting for them: and almost at once saw that allowance must be made for the effect, on many plants, of a hot, dry summer. This proved to some extent offset by a certain number of varieties now seldom seen.

Mr. J. Brookfield again won first prize and the Challenge

Cup for the big group. Both this, and one from Brookfield and Son, were well filled and staged; but one hopes that some day there will be a return to the display when at least six groups were shown.

Mr. Hayhurst won in the six hardy British varieties class, his best fern being a crested *imbricate setiferum*: Mr. Brookfield had an *Athyrium diadematum*, and Mr. Pye a *Clarissima*.

The same order followed in *Scolopendriums*, but with no specially noteworthy varieties.

In Polypodies, Mr. Hayhurst and Mr. Brookfield both included *Hadwinii*; and in Polystichums Mr. Brookfield and Mr. Hayhurst included *gracillimum*, and Mr. Pye had *Iveryanum*.

Mr. Hayhurst won in *Athyriums*, having a nice *Druery*; Mr. Brookfield showed *Clarissima* and *crispum coronatum*, as two of the three required.

In *Lastreas*, Mr. Brookfield and Mr. Hayhurst had the almost unknown variety *Nowelliana*. Mr. Hayhurst also included *ramossisima*, and Mr. Pye had an *angustata*.

Only Mr. Brookfield showed in the *Asplenium* Class, his best plant being *Trichomanes cristatum*.

For three hardy British, Mr. Brookfield was first, Mrs. Bassnett second, and Mr. Hayhurst (who included a fine *Allosorus*) third.

As usual, the class for one hardy British fern was the popular one, with seven entries. Dr. Wilkinson won this with *setiferum divisilobum densum*; Mr. Pye came next with a *percristate* Lady fern; and Mr. Robinson took third prize with an *Osmunda regalis cristata*. This last was of interest as being a form of the variety unknown to Mr. R. Perry, who has a wide and expert knowledge of *Osmundas*.

FERN GOSSIP

Three or four years ago, and for almost the only time that I recall, a self-sown seedling fern appeared at the edge of the fern-border which I then had. It was potted when large enough and soon showed *Polystichum setiferum* character, but developed, surprisingly, into a plant with well-crested frond tips, and is now steadily growing up.

Only one *Polystichum* in my collection was similar, and so must be presumed to have been the parent: this was the variety *Thompsonae*, which is liable to do most erratic things. Or was liable: very possibly it is not cultivated now, and mine eventually died.

Asplenium Trichomanes, when grown in a confined space such as a greenhouse or frame, is one of the most persistent self-sowers. It was, however, a surprise to find it self-established on a wall, half a mile away from my village and

in an area where it had not previously been recorded. There was one large plant and three smaller ones.

A visit some months later produced a shock. The large plant had been entirely removed: this can, with some certainty, be put down to human action, against which, as in too many quite dissimilar cases, it is difficult to find a safeguard. One can only hope the person concerned has been satisfied—and will not pass that way again.

An experience with a fine clump of *Adiantum capillus-veneris* (the British Maidenhair) has given me a fern motto: "Never despair."

It was in an open frame, in full sun, for a fortnight in June last year during my absence: and very little watered. When I returned, it was a mass of withered black stems. But watering was at once begun, and the whole plant kept almost sodden. It is now as good as ever.

During a visit to Glastonbury early in January, a look-out was kept for any wall ferns there might be: and this was well rewarded by finding a fine colony of *Ceterach* on the walls of a narrow street in the higher part of the town. *Asplenium Trichomanes* and *A. ruta-muraria*, as so often, kept it company.

In his inimitable account of the 1957 Excursion, Mr. Dyce refers to the curious fronds of some Harts tongues in one of the woods, as seen when mature. The young fronds, when first expanded, show marking of an exactly opposite nature: the narrow band, which borders the frond all round, being then pallid or white, becoming brown later and then almost black.

Various guesses at an explanation were made on the spot: one was, that the soil, in a coniferous wood, had some sort of chemical effect, possibly resinous.

Another was, that some fungus, perhaps a Rust, was responsible. This was disproved by an expert on such fungi at the Botanical School in Oxford, who kindly examined fronds chosen for the purpose.

Dr. Warburg, who was present at the time, suggested a nutritional cause: i.e., that an element in the soil is the explanation: and said that similar specimens had been seen in Kent.

Another is now offered, arising from the white fringe alluded to above: that there is an outgrowth of leaf-tissue lacking chlorophyll, and that this becomes oxydized by exposure to light and air and rain, or by one of these, producing browning, as in the case of metal (not fungal) rust. Plants were taken (there was abundance of specimens) and will be watched for future developments.

THE ROYAL HORTICULTURAL SOCIETY

FOR nearly 150 years The Royal Horticultural Society has been the leading Society in British Horticulture, and is now the largest in the world. For an annual subscription of two guineas a Fellow is kept in touch with all its operations, has the right to attend all its shows, to visit its gardens at Wisley, and to obtain advice on horticultural matters. Larger subscriptions carry increased privileges. All persons who are interested in horticulture are eligible for membership, and full particulars may be obtained on application to:

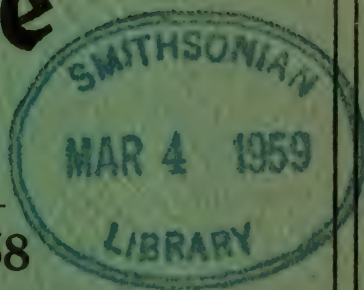
THE SECRETARY,
THE ROYAL HORTICULTURAL SOCIETY,
VINCENT SQUARE, LONDON, S.W.1

VOL. VIII

No. 10

- The -
**British Fern
Gazette**

WINTER, 1958



EDITED BY

Revd. E. A. ELLIOT, M.A.

SOUTH STOKE VICARAGE,
NEAR READING, BERKS.

PUBLISHED BY

THE BRITISH PTERIDOLOGICAL SOCIETY

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THE BRITISH FERN GAZETTE

NEW SERIES

Vol. VIII. WINTER, 1958 No. 19

CONTENTS	Page
EDITORIAL NOTES	219
OBITUARY	220
ANNUAL MEETING	222
PROGENY OF VARIETIES: P. GREENFIELD	225
THE 1958 EXCURSION: J. W. DYCE	227
A NEGLECTED FERN?: E. A. ELLIOT	231
SOUTHPORT SHOW: T. H. BOLTON	232
FERN GOSSIP: E. A. ELLIOT	234
ASPENIUM VIRIDE: F. JACKSON	234
LIST OF MEMBERS	236

EDITORIAL

For nearly nine years, since July, 1949, our late President was an almost unique personality in the botanical world; and we were fortunate indeed in this.

Probably few of our Members knew him personally, but their interests were his, and in particular, their problems, with which so much of Fern cultivation and study is deeply concerned.

We have, therefore, lost a source of world-wide information, which was always readily given, and which can hardly and certainly not easily be replaced.

It has been a privilege to have served as Editor from the same time at which he was elected President: as such, we offer a sincere tribute to his memory.

His successor, Mr. T. H. Bolton, is so well known in the gardening world that he hardly needs introduction: perhaps it is not so generally known that his father, the late Mr. Robert Bolton, was our President from August, 1948, till March, 1949: or that the Fern collection made by them both is one of the finest, in private hands, in this country.

We are, therefore, assured of good, and it is to be hoped, long continued interest at the top level in our Society.

The change in the date of the Annual General Meeting made in 1957, from May to September, has again proved most successful, as will be seen from the Report; and since it was held, Mr. A. C. Jermy, B.Sc., A.L.S., successor to

Mr. Alston at the British Museum (Natural History), has joined the Society, and will take over the post of Editor, which I have resigned.

This change has been officially approved by our Committee; I wrote to all of them (except one, whom I saw personally) and received agreement by post: this is here noted to show why no account of a Committee meeting is included in the *Gazette*. All contributions for future issues should be sent to Mr. A. C. Jermy, B.Sc., A.L.S., Department of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, and not to me: although I am continuing for a time as Hon. Secretary.

The 1959 Excursion, probably in September, will be held with Ambleside, Westmorland, as its centre. No hotel arrangements have yet been made, but Members who wish to take part are asked to let me know as soon as possible; they will be notified of plans when these are made, but in any case are asked to book rooms themselves.

In 1959 it will be 50 years since the *Gazette* was first published: we hope to make the Summer number (about June next) a special issue—with our Members' help in contributions of articles.

It is nearly ten years since the honour of Editorship was given me, and I thank all those who have so kindly enabled me, in that time, to carry out what was then entrusted to me, with pleasure.

E.A.E.

OBITUARY

ARTHUR HUGH GARFIT ALSTON

The death of our President, Mr. Alston, was briefly announced in the Spring issue of the *Gazette*. He died at Barcelona on the 17th of March. He was in his fifty-sixth year.

Mr. Alston became a member of the British Pteridological Society in 1931, shortly after his appointment as Assistant Keeper in the Botanical Department of the British Museum (Natural History), where he was given charge of the section dealing with the Pteridophyta. He had taken a degree at Oxford in 1924 and had held a botanical post in Ceylon, where he made a comprehensive study of the flora.

Mr. Alston became well known to Mr. Cranfield, then our President, and to other Members; and after the death of Dr. F. W. Stansfield in 1937, he found it possible, greatly to the satisfaction of the Society, to take over the Editorship.

This appointment would have commended itself to Dr. Stansfield, who had a high regard for Mr. Alston's wide knowledge of ferns.

Mr. Alston joined our excursions in 1937, based on Charmouth; but in 1938 and 1939 he was in South America collecting specimens of ferns for the British Museum. In his absence, his chief, Dr. Ramsbottom, kindly edited the *Gazette* for us.

During the war Mr. Alston's work at the Museum had to be suspended, and he was temporarily transferred to another Government Department.

When the difficult task of reconstructing the British Pteridological Society, after the suspension of its functions at the beginning of the War, was taken in hand in 1947, Mr. Alston gave valuable support; but his health was not entirely satisfactory, and he found it impossible to continue the work of editing the *Gazette*. He was, however, persuaded to take the Presidency, which had become vacant on the death of Mr. Robert Bolton.

In 1953 and 1954 Mr. Alston went on another long expedition to collect ferns—this time to Sumatra, Java, Celebes and part of Borneo. That he was an experienced traveller and keen explorer is evident from the account of his journey contributed to the *Gazette* (Vol. VIII No. 5). His journeys to America and Asia resulted in large additions to the British Museum herbarium. Other places visited included Sweden and countries bordering on the Mediterranean.

Mr. Alston was at one time a Vice-President of the Linnean Society and a Vice-President of the Botanical Society of the British Isles. He served on several committees of the Botanical Society and was on their panel of specialists as an authority on the Pteridophyta.

Although British species of ferns are a mere drop in the ocean of the great mass of the world's ferns, with which the British Museum has to concern itself, Mr. Alston took a keen interest in our Society, and, partly as a result of his travels abroad, introduced several new members. Quiet in his manner, he could relax, and seemed to enjoy the company of people genuinely interested in vegetation, particularly, of course, ferns.

P. GREENFIELD.

In August, 1935, a special General Meeting was held at Southport during the Show, at which Mr. John Brookfield began his long career as a Fern exhibitor; and in that year or in 1936 became one of our Members. A further reference

to him will be found in the Society's report to the 1958 Annual Meeting: as a Fern-grower of success and unfailing enthusiasm he will be much missed.

In March, 1958, we lost our oldest Honorary Member, Mr. C. H. Curtis, M.B.E., J.P., F.L.S., V.M.H. He was Editor of the *Gardeners' Chronicle* for many years, and during that time and after his retirement often wrote, himself, a note on Ferns for his paper, and in this way obtained new Members of our Society. He was a descendant of William Curtis, who won fame as the founder in 1787 of the *Botanical Magazine*.

THE ANNUAL MEETING

The 55th Annual General Meeting was held at 2.30 p.m., on September 27th, 1958, in the Board Room of the British Museum (Natural History) by kind permission of the Trustees.

Present: Professor Holttum, Messrs. Dyce, P. Greenfield, Temple, Mr. and Mrs. Healey, Messrs. Crabbe, Dyer, Wright, and the Rev. E. A. Elliot.

Professor Holttum was unanimously elected Chairman.

Apologies for absence were received from Dr. Swinscow.

The Minutes of the previous meeting were read, passed and signed.

The Chairman then made sympathetic reference to the late President, Mr. Alston, and to his work: as did also Mr. P. Greenfield.

The election of officers followed.

Mr. T. H. Bolton's name was the only one nominated as President, and he was declared elected subject to his consenting.

The Vice-Presidents elected are:—Mr. Whiteside, Mr. Kaye, Professor Holttum, Rev. E. A. Elliot, Dr. Swinscow, Mr. P. Greenfield.

Mr. Dyce was re-elected as Treasurer; Mr. Temple as Auditor; the Rev. E. A. Elliot as Secretary.

Mr. Elliot asked that his resignation as Editor should be accepted after the next *Gazette* was published.

It was agreed that the Committee should take action in appointing a new Editor, the matter to be left over for the present.

The Committee was then elected: Dr. Davidson, Mrs. Healey, Mr. Jackson, Mr. Dixon, Mr. Russell, Mr. Wainwright, Mr. Hayhurst, Mr. Crabbe, Mr. Robinson, Mr. Dyer, Mr. Healey.

The Chairman asked for the Treasurer's Report and Statement, which Mr. Dyce then made.

FINANCIAL STATEMENT at 30th JUNE, 1958

1957	£	s.	d.		£	s.	d.
30th June				"Gazette"			
To Balance ...	43	15	0	Vol. 8 No. 9 ...	26	12	6
Subscriptions ...	47	10	0	Printing Expenses	6	7	11
Donations ...		15	0	Subscription—			
Sale of "Gazettes"	2	5	0	R.H.S.	2	2	0
				Postages and Inci-			
				dental Expenses—			
				Secretary 1956/57	1	2	2
				Secretary 1957/58	1	0	0
				Treasurer ...	3	17	10
				Balance ...	53	2	7
	£94	5	0		£94	5	0
1958							
30th June							
To Balance ...	£53	2	7				

This was unanimously accepted, and Mr. Dyce was thanked for all the work he had done.

The Chairman then asked for the Secretary's Report, and this was also accepted, with thanks, which were also expressed to Mr. Temple as Auditor.

SECRETARY'S REPORT

The past year has seen the deeply-regretted and unexpected loss of our President, sentiments felt not only by us as a Society but by Botanists in all parts of the world. Further reference to this will be made in our next *Gazette*, and to the shock felt by all who knew him, when the news of his death was received.

In the *Gazette* for December, 1949, in the account of Southport Show, there is a reference to Mr. John Brookfield as "our veteran exhibitor." It can fairly be said that he subsequently became "a venerable exhibitor" and it is with very deep regret that we record his death early in this year.

The leading Southport newspaper in its report gave the welcome news that Mr. Noel Brookfield, his son, is continuing his interest in Ferns and achieving as great success as ever in the prize-winning list.

We have lost a certain number of Members, but have also gained new ones, whom we welcome in the belief that they are all ardent and enthusiastic supporters. Our numbers remain, therefore, much the same as a year ago.

Individual activity has occurred, or may be presumed: and a week today the combined efforts of the Annual Excursion begin.

Mr. Dyce brought a plant collected by him in Somerset last year—a small *Polystichum angulare* (*setiferum*) provi-

sionally named *Cristato-gracile*. It may show more development next year, and the name will be revised if necessary.

Mr. and Mrs. Healey brought several interesting fronds of *Athyrium*.

Mr. Greenfield showed Mr. F. Jackson's rogue fronds from an offset of *Polystichum angulare*, "Moly's Green," referred to on another page.

The Treasurer presented his Financial Statement as shown, and his Report stated that the position was satisfactory. Income has come in well, but about 20 members have not yet paid their dues. The cost of one *Gazette* had to be met, but there was no increase in cost this year. Printing expenses have been greatly increased by the purchase of a new supply of stationery, and the printing of leaflets and forms.

PROGENY OF VARIETIES

Our member, Mr. F. Jackson, of Borrowdale, in the Lake District, has reported the production of some extraordinary fronds on an offset from his plant of *Polystichum angulare* (*setiferum*) *pulcherrimum* of the type known as "Moly's Green." This type is probably the only *P. angulare pulcherrimum* found wild which survives (*Gazette VII*, No. 11). Unlike the others it is remarkably vigorous and has frequently produced offsets.

Specimens of the extraordinary fronds furnished by Mr. Jackson brought to mind illustrations in a paper contributed to the Swedish periodical "Hereditas (IX Feb., 1927) by Miss Irma Andersson, who was at one time a member of the British Pteridological Society when she was engaged in research at the John Innes Horticultural Institution. Fortunately for the present purpose a description of her paper by Dr. F. W. Stansfield, originally printed in the *Gazette* (Vol. V., June, 1927) was reproduced in the *Gazette* for 1957 (Vol. VIII, No. 8), to which reference should be made in regard to the experiments with *Polystichum angulare*. Miss Andersson's purpose in sowing from a variegated form of this fern was to investigate the question of the inheritance of variegation. The fern she obtained for the experiment was, according to Dr. Stansfield, *P. angulare inaequale variegatum*. Miss Andersson described it as having the familiar characteristics of *P. angulare* but with pinnules rather less regular in shape owing to the amount of white tissue. She describes the forms she raised from it as: (1) plants similar to the original parent; (2) plants similar to these as regards the shape of the pinnules, but different in being imbricate in both pinnae and pinnules; (3) a form with truncated fronds which usually terminate in a short horn-like protrusion of the rachis, with pinnae of various lengths, each

with from three to seven pairs of pinnules usually terminating in one that is fan-shaped; the pinnules are more or less cuneate—flabellate, palmately lobed and toothed; (4) a form similar to (3) but with pinnae and pinnules imbricated. As is too often the case, the illustrations in the paper are on too small a scale to show the necessary detail in fronds that are at all foliose, but the third form can easily be indentified as *grandidens*.

The specimen fronds furnished by Mr. Jackson, produced in 1957, are not precisely similar to Miss Andersson's. They are (1) forked, almost ramose at the tip, pinnules showing a tendency to approach the *grandidens* type; (2) truncated, with few pinnae, tendency in secondary rachides to divide, pinnules towards tips of the short pinnae exceedingly irregular in shape, here and there flabellate; (3) much the same as (2) but with pinnules at the head of the frond indescribably irregular. Although these specimens are even more roguish than Miss Andersson's it seems not unlikely that *grandidens* may be the villain of the piece in each case. Specimens of fronds produced in 1958 are (1) a frond forked near the base, one branch being approximately like a normal frond of the parent; the other itself forked half-way up, these forks again dividing and cresting to form a not altogether unsuccessful attempt to become a *grandiceps*—a few of the pinnules in the head are rather pointed and falcate, suggestive of the characteristic *pulcherrimum* pinnules of the parent; (2) this frond is similarly forked, near the base: one branch is more or less normal with larger pinnae near the apex with some secondary forking and pinnules somewhat abnormal: the other branch of the basal fork is similar, but one of the pinnules at the head is itself forked and here the pinnules are irregular in shape and clustered.

"Moly's Green" *pulcherrimum*, as already stated, is very vigorous. Its appearance is more or less that of normal *angulare*, but for the prothallic extensions usually to be seen on some of its fronds. No one would suspect it of being of complex ancestry or of a capacity to produce freakish descendants. It is, however, the case that when attempts were made to raise progeny, aposporously, from some types of *angulare pulcherrimums* only irregular forms were produced. But such forms produced through an offset is a remarkable occurrence.

Other examples of mysterious happenings in the caudex of a fern are:

- (a) A plant of *Polystichum angulare plumosum grande*, Moly, in the Spring of 1909 produced its usual fronds from one half of the crown, and the other half

remained dormant. When the dormant half developed in July it produced fronds of *aculeatum* character.

(b) In the case of Moly's green pulcherrimum itself, Dr. F. W. Stansfield was able to select a crown which produced true pulcherrimum fronds exclusively. This plant gradually weakened, and after a wet Winter followed by a dry Spring the new fronds came up feebly and many failed. Shortly afterwards a number of normal fronds developed and the fern being thereby strengthened reverted to the original habit of producing both pulcherrimum and normal fronds.

(c) If the fronds of a *Polystichum angulare*, which would probably be of a near-normal type, are removed by a hedge-cutter, and a new frond is formed, that frond is likely to be of *grandidens* type. In such a case the fern would almost certainly revert very shortly to its normal pattern.

The *grandidens* type is something of a nightmare. Much space is devoted to it in the books of both Lowe and Moore. The fern is irregular in itself and some of its forms were treated as sub-varieties and given distinctive names, e.g.: *grandidens interruptum*, *g. angustatum*, *g. dissimile*, and *g. cornutum*. Miss Andersson's form (3) may be taken as representing *grandidens* and its form *cornutum*.

The forms recorded by Lowe and Moore were found wild.

Incidentally, Moore, in a description of *Polystichum angulare proliferum*, Wollaston, refers to some curious sporting pinnae of this variety in which the parts are variously depauperated, the development in some cases resembling *grandidens*.

And here, pending further research, we must bring to a close this inconclusive story, which probably reads like a representation of chaos. It may seem strange that the result of Miss Andersson's experiment was a surprise to the Society, but that can be accounted for by the practice, when raising from spores, of selecting at an early stage only the most promising seedlings and discarding the rest.

P. GREENFIELD.

THE ANNUAL EXCURSION, 1958

The Annual Excursion had to be postponed until the beginning of October, and our party foregathered on the 4th at the Old Bell Hotel, Axminster, for a week's hunting in the surrounding district, one which has been hunted well many times before, but still retains much of interest for the fern-hunter. Seven members were present, some for only part of

the time, but we missed our Secretary, the Rev. E. A. Elliot, who has not been well for some time, and to our regret was unable to join us.

We travelled down to Axminster in a day of heavy rain, which did not augur well for the success of the Excursion, but in the event we were favoured with weather which did not hold up hunting at all during the whole week. Such rain as we had during the days was mostly a light drizzle, and some were dry and sunny, so we count ourselves fortunate to have picked such a week, in a year when rain has been more common than sunshine.

This corner of England where Devon, Dorset and Somerset meet, is one of the best fern-hunting areas in the country, and one which was well-known and well-hunted by the prominent fern-men in the latter half of the last century. In fact, there is a feeling among us that they hunted *too* well, for we have very little success to-day in the finding of first-rate varieties. Moly, who found no less than nine *Polystichum angulare pulcherrimums*, could find two *in one day*—there is no record of a single one having been found in the last 60-70 years. However, we can console ourselves with the thought that Wollaston, one of the foremost hunters, whose greatest ambition it was to find a *pulcherrimum*, never succeeded in doing so. We still hope, nevertheless, and as we walk slowly along the lanes, our eyes dart from frond to frond, searching for that grace and feathery appearance with the long finely cut lower pinnules, which are the characteristics of this most beautiful of the *P. angulare* varieties.

Axminster is surrounded by names familiar in fern-hunting history—Hawkchurch, linked with the name of Moly, Thornecombe, the home of Dr. Wills, Shute, Colyton, Uplyme, Monkton Wyld, and many others, which in the old records appear again and again, associated with the finding of first-rate varieties. We were eager to see what they had to offer us, and within a short time of our arrival, with an hour to fill before dinner, we sallied forth to hunt the old walls in the town, where there was always the chance of finding a good hartstongue, dwarfed and struggling for existence in a dry chink. Hartstongues there were in plenty adorning the walls, in company with maidenhair and black spleenworts, ceterach, and polypodies, but of variation, not a sign.

Old walls covered with ferns abound in the West Country, and wherever we went in the days that followed, we stopped to look them over. In addition to those mentioned above, wall-rue was the other common fern in such habitats, but the species which gave us most pleasure was *Ceterach officinarum*. We found it many times, sometimes

only a single plant, but in some places large colonies flourished. One wall in particular impressed us, with a colony which we estimated to contain over 500 large clumps.

Dryopteris aemula is another favourite fern, and as a fine colony known to exist near Monkton Wyld was not far removed from Axminster, it was decided to start our first day with a visit to the spot. Once again, to our great delight we were able to discover the fern in still greater numbers, spread over a much larger area along a lane which we had not explored during previous visits. Later in the week we found two more colonies of *aemula*, and we have come to the conclusion that it is probably not so rare in the district as we have been led to believe.

Hunting in the West Country is, of course, predominantly *angulare* hunting, and most of our week was spent assiduously and hopefully scrutinising thousands of this species for that differing pinnule, which could mean something good. Minor variation was common within the limits of the normal, but this year we found fewer plants varying sufficiently to make them worth collecting. Tripinnate forms were noted wherever we hunted, but beautiful as this variation can be, it has to be something exceptionally good to secure a place in the fern garden. Of much more interest are the acutilobes, and the Shute district appears to be a good one for this type of variation. In previous years we have never been able to find more than one good example in a week's hunting, but this time in the lanes around Shute we found several, all worth while plants. Only the best one, consisting of several crowns, was collected and divided amongst us, but it will probably be some years before its quality can be assessed. I have noticed that wild finds of this variety can be most changeable and unpredictable in cultivation, becoming in some cases almost normal for a year or two, then gradually developing and improving their acutilobe characters over the next few years. One such plant in my possession, found in 1953, is a good example, and its improvement over the last three years is such that it is now a splendid first-rate variety, indistinguishable from Dr. F. W. Stansfield's Howley find, which is one of the best of the non-proliferous acutilobes.

While there was plenty to interest us in the ferns we saw, the number of varieties worth collecting was disappointingly small. *Blechnum spicant* for once came to the fore, and provided us with one quite good crested plant, and two others not so good with divided apices. On our last day a scolopendrium was found with long narrow lacerated fronds; it could not be called a handsome fern, but was collected because of its possible potentialities as a parent. The *angulare* acutilobes

complete a disappointingly short list of note-worthy varietal finds.

Species of ferns noted amounted to 16 in all. One other, *Thelypteris oreopteris*, we should have seen but didn't, in spite of a careful search in the likely places. *T. phegopteris* and *Gymnocarpium dryopteris* are also once again absent from our list. There is only one record, by Moly, of beech fern for the Axe Valley, and although the exact location is not given, we feel confident that our search was in the right place. Lack of time and the excessive boggy nature of the ground after the wet summer, prevented us from making a thorough search, but the wood has been noted for further attention in the future.

There are many old records for *Osmunda regalis* in the area, but as this is a fern which is always coveted when seen growing in the wild, we fear that its old habitats know the Royal Fern no more. It was, therefore, with great delight that we discovered one large specimen on a wild overgrown wooded slope. Although only 10 yards from the road, a jungle of thorn and blackberry has no doubt saved this plant, and possibly some others in the same place, from the fate of its fellows. Long may it flourish there!

The common fern around Axminster, growing prolifically in every lane and hedgerow, is *Polystichum angulare*, but hardly less common though fewer in numbers, is *Phyllitis scolopendrium*, ranging from dwarfed plants in old walls to large luxuriant specimens in shady woods, and reaching gigantic proportions in the Landslip between Seaton and Lyme Regis. *Polypodium vulgare* flourishes in profusion along the tops of walls and banks, and on old tree trunks; many colonies of the bifid variety were noted. Everywhere, too, can be found *Dryopteris filix-mas*, *D. borrieri*, and *D. dilatata*, and in the damper places, *Athyrium filix-foemina*. In the shade of the wet woodland the lady fern grows to a great size with wide foliose fronds, and keeping in company, *D. spinulosa* is locally common together with its *dilatata* X forms. With them we found occasional colonies of the horse-tails *Equisetum telmateia* and *E. sylvaticum*, and in similar habitats *Blechnum spicant* grew strongly. I have already mentioned *D. aemula*, and the wall ferns *Asplenium trichomanes*, *A. adiantum-nigrum*, *A. ruta-muraria*, and *Ceterach officinarum*. To complete the list, *P. aculeatum* was found in many places, in marked contrast to North Somerset, where it was decidedly uncommon.

Finds may have been few, but fortunately the success of our meetings is not measured by the number of good varieties

found, and we all enjoyed to the full the Excursion to Axminster, helped in no small measure by a comfortable hotel, with plenty of good food, and courteous service.

J. W. DYCE.

A NEGLECTED FERN?

One of our smallest species, and one which is often met with, is the frequently ignored *Asplenium ruta-muraria*, Wall Rue.

The word "common" is usually applied to it, but should be mistrusted; as there are many quite extensive areas where it does not grow.

It can, however, be fairly said to be ignored; when a fern list is being compiled for any given locality, the account often runs *Athyrium*, *Scolopendrium*, *Polystichum*, *Dryopteris*, etc., and *A. ruta-muraria*, thrown in (with perhaps *Bracken*) as a sort of make-weight!

But it has a distinction of its own, not by any means shared by all species, in that it still holds the name given it by Linnaeus. There have been other names proposed; T. Moore gives them thus: *Asplenium Matthioli*; *A. murale*; *A. murorum*; *A. pygmaeum*; *Adiantum pygmaeum*; *Acrostichum ruta-muraria* *Amesium ruta-muraria*; *Phyllitis*, *Scolopendrium* and *Tarachia ruta-muraria*. The original Linnaean name has the support of a great majority of botanical writers.

The attempt to put it in the genus *Adiantum* (Maidenhair ferns) may be due to a peculiarity which *Adiantum capillus-Veneris* (and a few others) share with this species: this is, the absence of a midrib to the pinnules.

Some of our *Aspleniums* differ from others in chromosome number: some are $2n = 72$, others are $2n = 144$, including *ruta-muraria*.

Very few varieties have been found, and most of those recorded are of a depauperate character. Some are from Ireland, others from Scotland, others from Wales: the best one, a cristate form, sometimes also proliferous, bearing young plants in the axils of the pinnules, is recorded from Denbighshire, Surrey and Kent.

When growing on old walls the fronds are from about 1 to 3 inches long; but when found in its original home on and between rocks, they are up to about six inches in length. A specimen in my collection obtained near Buxton was this size, maintained under potted cultivation. It is generally supposed to be a difficult fern to grow, and the utmost care is needed to obtain it without damage to the very fine roots. Now and then, however, a wall is discovered in an almost ruinous state, and the task of extraction becomes fairly simple.

The roots should be kept damp until potting can be done, using a 3-inch pot. This must be half-filled with a compost of a little fine soil and a large amount of lime chippings, pebbles, broken sandstone (as small as possible); the roots spread out carefully on the surface of this mixture, and gently covered, but only just enough to hide them, with more of the same compost. Water gently, too, and sparingly rather than otherwise; some shade is better than full exposure to sun: and the essential good drainage is helped by placing the pot in another (empty) of the same size.

We may, however, prefer to leave the fern *in situ* to adorn its wall. In which case, this is a plea for full recognition of it and, if one is so inclined, a close inspection for a variety; since none are now probably in cultivation. And one of the main pleasures of plant hunting is, that one never knows. . . .! Nor should the possibility of finding hybrids which it has helped to produce be overlooked; two are named in Clapham, Tutin and Warburg's *Flora*: *A. ruta-muraria* x *septentrionale* = *A. x Murbeckii*: and *A. r-m* x *trichomanes* = *A. x clermontiae*.

One of the first pair is so well known as a rarity that there is not much chance for most of us to discover it. In the *Flora* already referred to, it is given as the same as the variety *cuneatum*, mentioned by T. Moore as having been found at Stenton Rock, Dunkeld, Perthshire.

In the second case, the *trichomanes* may be presumed to be the diploid form, of mountainous and northern parts of this country: and so the hybrid cannot be expected in lowland or southern areas where the tetraploid prevails. Although, according to the record (one instance only) it is excessively rare, it may yet turn up again since it has done so once: if anyone can let me have details of its characters, they will be most welcome.

E. A. ELLIOT.

SOUTHPORT SHOW

The report this time was most kindly made by Mr. T. H. Bolton, who, with Mr. F. Jackson, judged the Fern competitive entries: the results are as follows, but the usual short comments on the exhibits were not possible, since the time allotted to judging is limited, and there was other work to do as well.

List of winners in the Fern Class—Southport, 1958.

Group of Hardy British Ferns—

1st prize, British Pteridological Society Silver Perpetual Challenge Trophy and £25 : 1, Messrs. John Brookfield and Son, Birkdale.

Six Hardy British Ferns—

- 1, Mr. B. Hayhurst, Freehold, Lancaster; 2, Messrs. John Brookfield and Son, Birkdale; 3, Mr. J. Pye, Derwent Road, Lancaster.

Three Scolopendriums—

- 1, Messrs. John Brookfield and Son, Birkdale; 2, Mr. B. Hayhurst, Freehold, Lancaster; 3, Mr. J. Pye, Derwent Road, Lancaster.

Three Polypodiums—

- 1, Messrs. John Brookfield and Son, Birkdale; 2, Mr. B. Hayhurst, Freehold, Lancaster.

Three Polystichums—

- 1, Messrs. John Brookfield and Son, Birkdale; 2, Mrs. B. Hayhurst, Freehold, Lancaster; 3, Mr. J. Pye, Derwent Road, Lancaster.

Three Athyriums—

- 1, Mr. B. Hayhurst, Freehold, Lancaster; 2, Mr. J. Pye, Derwent Road, Lancaster; 3, Messrs. J. Brookfield and Son, Birkdale.

Three Lastreas—

- 1, Mr. B. Hayhurst, Freehold, Lancaster; 2, Messrs. J. Brookfield and Son, Birkdale; 3, Mr. J. Pye, Lancaster.

Three Aspleniums—

- 1, Messrs. J. Brookfield and Son, Birkdale.

Three Hardy British Ferns—

- 1, Messrs. J. Brookfield and Son, Birkdale; 2 Mr. N. Robinson, Fulwood, Preston; 3, Mr. B. Hayhurst, Freehold, Lancaster.

One British Fern—

- 1, Mr. B. Hayhurst, Freehold, Lancaster; 2, Messrs. J. Brookfield and Son, Birkdale; 3, Mr. J. Pye, Lancaster.

Six Greenhouse Ferns—

- 1, Messrs. J. Brookfield and Son, Birkdale; 2, Mr. B. Hayhurst, Freehold, Lancaster.

Three Greenhouse Ferns—

- 1, Messrs. J. Brookfield and Son, Birkdale; 2, Mr. B. Hayhurst, Freehold, Lancaster.

One Greenhouse Fern—

- 1, Messrs. J. Brookfield and Son, Birkdale; 2 Mr. B. Hayhurst, Freehold, Lancaster.

FERN GOSSIP

At the annual Exhibition meeting in London, arranged by the Botanical Society of the British Isles, Dr. Swinscow showed a potted plant of *Dryopteris dilatata* var. *lepidota*, a fern seldom seen now, but one of distinct appearance and with a long history.

In an explanatory note accompanying his exhibit Dr. Swinscow quoted T. Moore's statement (1859) that the plant was first noticed in the collection of Mr. Tait, of Edinburgh, who had obtained it from Mr. Stark, a nurseryman of that city, with the information that it had been procured from Yorkshire.

Dr. Swinscow gives the chromosome number (of which two illustrations were shown) as $n = 82$: and says that the scales lack the distinctive dark stripe, or barely show it, which is one of the distinguishing features of the normal *D. dilatata*.

Mr. R. A. Graham (Kew), in his exhibit, "The extinct plants in Bentham and Hooker," had three specimens of *Asplenium fontanum*: with a note that the fern "was never other than an escape." This is true, to judge from its continental habit of damp rocks often shaded by trees. Mr. Graham's were those collected in 1853 and 1855, probably the last so obtained as true *fontanum* in this country.

Mr. Dyce has made an interesting and excellent suggestion that members should write articles saying why they are interested in Ferns; or, why they became interested; or both. Out of this he proposes to make a complete article embodying some or all of each contribution.

We hope this idea will appeal to many, as it is within everyone's power: any such responses should be sent direct to Mr. Dyce, and not to the Editor.

The latter would be glad of short expressions of opinion on the value of the *Gazette*, to be combined by him in the same way that Mr. Dyce proposes.

ASPLENIUM VIRIDE

In this part of the Lake District where I have found *A. viride*, it is as far as I can ascertain, almost non-calcareous; there are many strings and veins of Quartz running through most of the rocks. On Honister Crag *A. viride* is very plentiful, this is on the slate; whether the slate contains lime I cannot say as I have not been able to find an analysis, but it contains a small amount of iron pyrites. The ferns that grow on the rock itself are mostly rather small, some of the finest plants grow on the slate rubble mixed with a little soil caused by decayed vegetation and others in pockets of rich black soil. You could, I think, almost call it leaf-mould. Some of the plants are mixed up with *Cystopteris fragilis*,

and other plants that grow near are *Thalictrum minus*, *Alchemilla alpina*, *Calluna vulgaris*, *Orchis mascula*, *Saxifraga hypnoides*, *Chrysosplenium oppositifolium*, *Oxyria digyna* and *Plantago maritima*. Incidentally, this is the place where some years ago I found *Dryopteris villarsii*, it was growing on an old quarry wall, dry stone, not mortared. The stations I now mention are all on the Volcanic series, namely, Taylor Gill, Grain Gill and Redbech Gill; these are about half-a-mile from Seathwaite. At the first two stations the ferns are growing in the rock crevices and are mostly small, poor plants. At the latter station there are some very fine plants growing in company with *Asplenium trichomanes*; this is the only place that I have seen this occur. I have also found *A. viride* in Hell Gill; this is a ravine in Oxendale at the head of Langdale valley. I went there to look for *Saxifraga oppositifolia*, which I did not find; the rock here is also volcanic, the plants were only small, growing in cracks in the rock. *A. viride* also grows in Launchy Gill. This is in Thirlmere; the rock here is also volcanic. Some of the plants here were very good specimens: Ashness Gill and Gable Crag are two more stations, the first one is rather interesting as the rock here is composed of breccia and lava and contains a little lime, 6.048 in 100.000 parts. The plants here grow on rocky ledges among some gritty soil. There are some very fine plants here, they are mixed up with various grasses and mosses. The second place is at the head of Newlands valley, where the ferns are growing; the volcanic rock is in conjunction with the Skiddaw Slate. The plants here are rather small, growing in the rock crevices.

The last three stations are very interesting, they lie many miles apart but are very similar in many ways, namely, as they are all mineralised. In Warnscale, which is a continuation of Buttermere Valley, there is a ravine down which flows the stream that drains Blackbeck Tarn. Near the head of this ravine, where the volcanic series and the Buttermere and Ennerdale Granophyre are in conjunction, with the Honister Slate vein running through them, the ground is highly mineralised; Iron Pyrites is present, also traces of Copper and Lead.

Here a small drift has been driven into the lode, it is here that some very fine plants of *A. viride* grow, there were no plants anywhere else in the ravine. They were growing among various sorts of mosses. The Rigghead Slate Quarries above Rosthwaite are another station. Here a copper vein intersected the slate vein and a small drift has been driven on this. Around the mouth of this drift there are some of the finest specimens of *A. viride* I have ever seen; *Cystopteris fragilis* was present, also *Oxyria digyna*. *A. viride* grew nowhere else in this area. The western side of Newlands

Valley is composed entirely of Skiddaw slate; at the lower end of this valley is Smeltmill Gill, there is a very old lead mine. On the site of this mine there is a small man-made open rock cutting containing traces of lead; this is where *A. viride* grows in company with a very obtuse form of *A. adiantum nigrum*. I have not found this anywhere else. Other plants there were *Thymus Serpyllum* and *Ulex europaeus*. To me it appears that *A. viride* has a strong liking for mineralised ground. I wonder if anyone else has noticed this, perhaps around the Derbyshire Lead-mines.

F. JACKSON.

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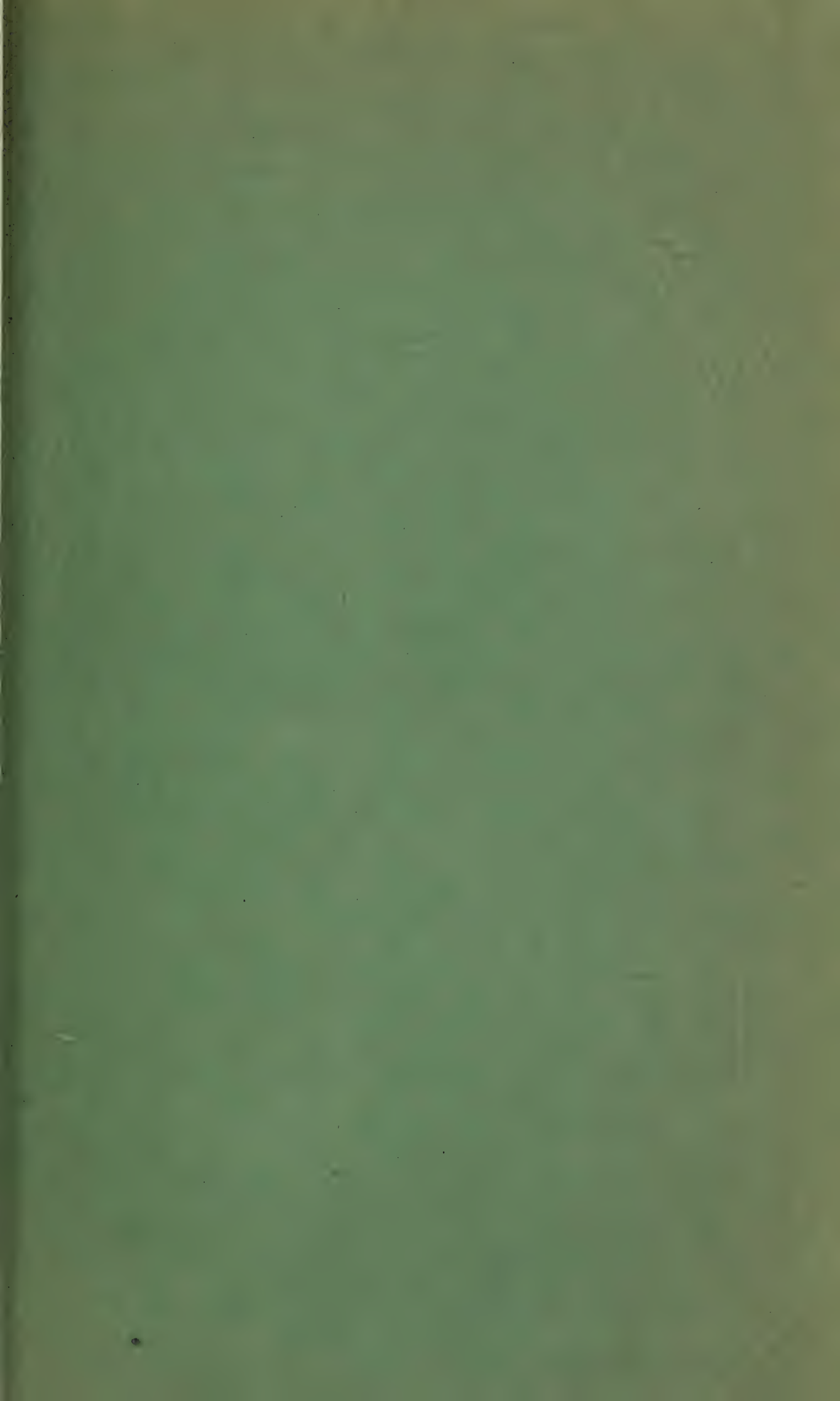
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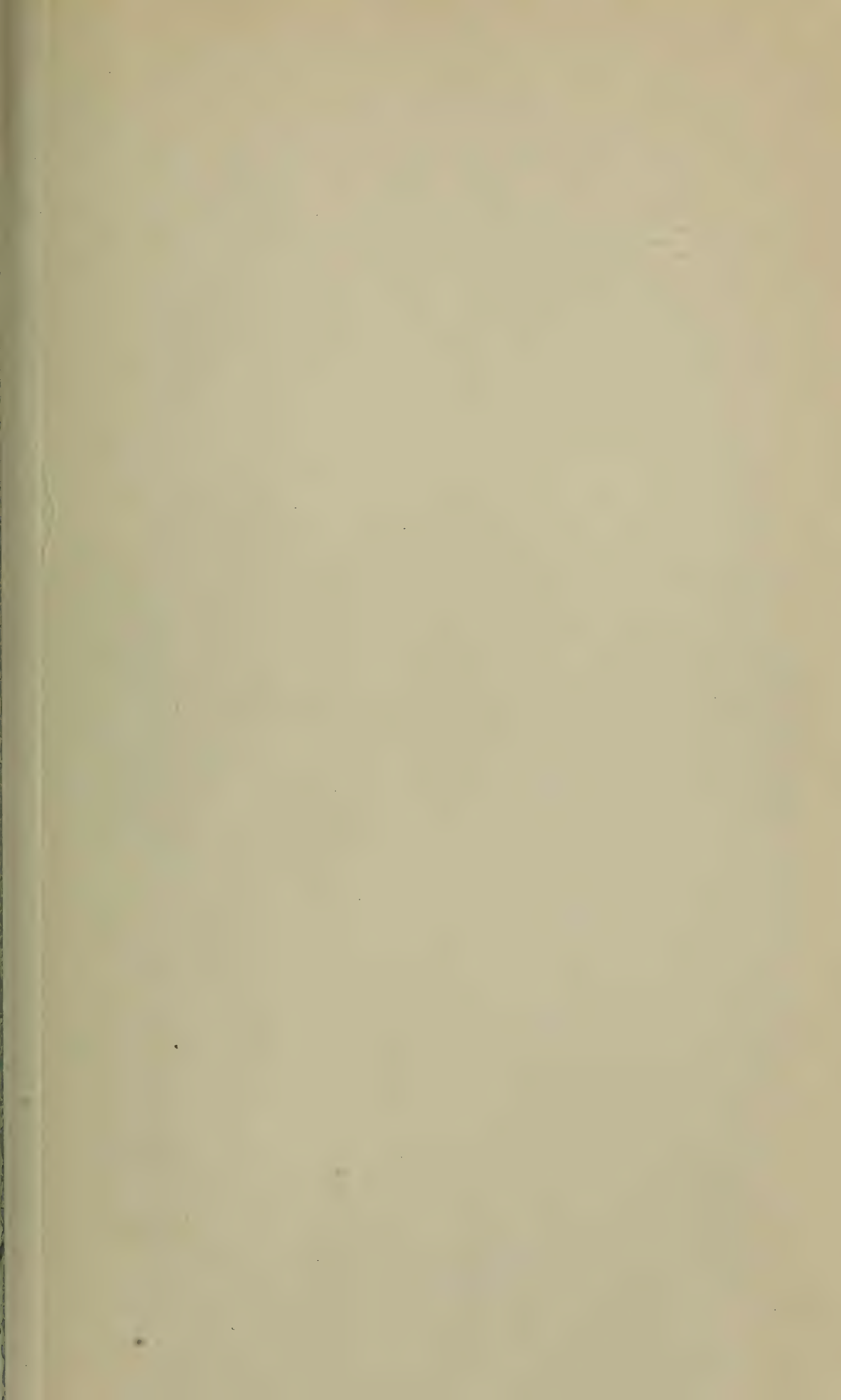
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